THE·NIAGARA·BOOK

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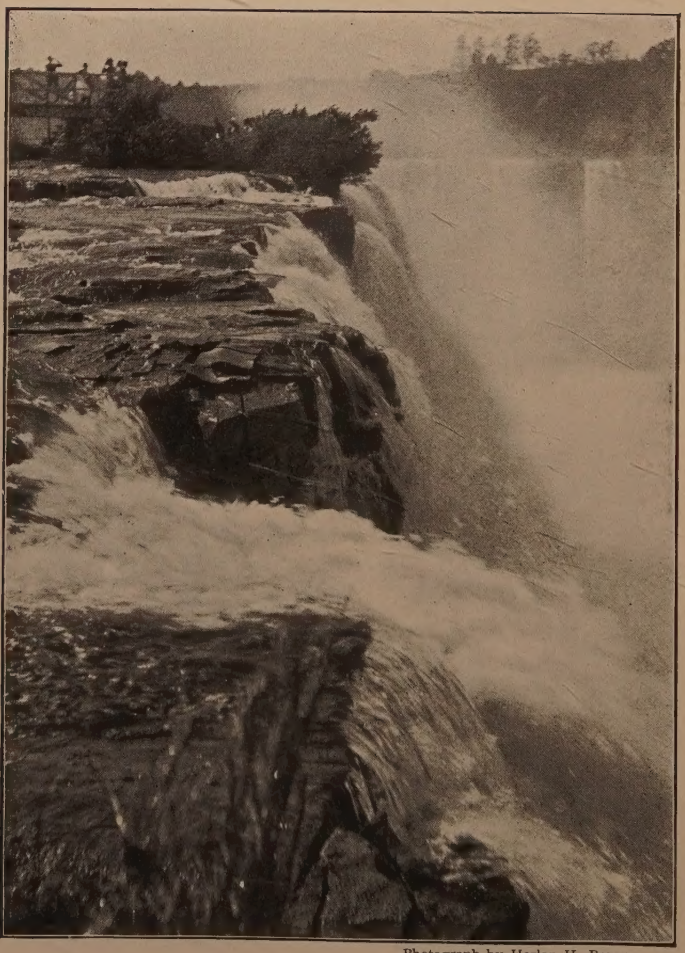

Photograph by Harlan H. Boyce.

A NOVEL VIEW OF THE HORSESHOE.

The Niagara Book

BY

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PROF. NATHANIEL S. SHALER, AND OTHERS

NEW AND REVISED EDITION

With Remarkable Photographic Illustrations

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THE NIAGARA BOOK.

PART I.

WHAT TO SEE.

By Frederic Almy, A.M.

A CONSECUTIVE DESCRIPTION FOR VISITORS.

I. The Cave of the Winds.
II. The Maid of the Mist.
III. Queen Victoria Park; the Horseshoe Fall; the Dufferin Islands.
IV. The American Rapids; Prospect Park; Goat Island; Luna Island; the Three Sisters.
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I.

THE CAVE OF THE WINDS.

THE most greedy imagination need not remain long hungry at Niagara. One well-used day, with a sun bright enough to start the rainbows, can satisfy every expectation; and yet, many who see the Falls for the first time are disappointed. There are various reasons for so general an experience, but no one of them implies any short-coming in the place. A rather stolid mind takes in such a sight slowly, and one look does not quicken it, while a more sensitive temperament is apt to come to Niagara with such composite anticipations that no single aspect of the place could satisfy them all.

If you are easily moved it may be that a tremor of excitement will take possession of your senses as you approach Niagara for the first time, and so subdue your judgment that you will have no power to criticise; but, on the other hand, no matter how callous you may be, no matter how utter a Philistine, it is possible

for you to be so introduced that you will be made an instantaneous convert to the majesty of the place if not to its beauty. If you are willing to take the climax of Niagara at the outset and so forestall every possibility of disappointment, you will do well, without the least preliminary glance of any kind, to enter the watery chaos of the Cave of the Winds.

Cross the stone bridge that leads to Goat Island, with the rapids of the American Fall slipping furiously under you as they fall from the sky line at the left; with the brink itself a few rods below you on the right, so that you see the plunge, but not the fall; with the roar of the torrent in your ears and the musty smell of the roily water in your nostrils; and finally, before you in the distance, rising over the tree tops of Goat Island, the pillar of cloud by day that guards the Horseshoe. If it is very early morning in midsummer, and the wind is favorable, a rainbow, zenith high, will overarch the scene, but this is hardly needed to quicken the pulses of your heart as you advance to meet the wonder of your thoughts from early childhood. Take now the middle path across the idyllic beauty

of the island. You find it a cool bower, sweet with every wood fragrance, carpeted in the spring with masses of blue violets and white trillium, and overspread by branches of huge trees whose leaves sift out the sunlight until it falls in patches only on the road below. It is a place in which to "loaf and invite the soul," as Whitman says, but now is not the time. Five minutes brings you to the dressing house that marks the entrance to the Cave of the Winds. Here it will take a strong will not to look down over the hand rail on the bank; but the epicure in sensations will refrain. Indeed, to look now is to spoil everything, and to accept for your first view of Niagara one of the least imposing. Instead, step quickly into the house, pay your dollar for the necessary escort of a guide, strip to the skin with no thought of retaining even your underclothes, and put on the homely and uncomfortable but eminently practical suit that is offered you. A blouse and trousers of a light gray flannel, a hooded coat and overalls of yellow oilskin, and slippers made out of a sheet of thick white felt folded around the foot and firmly tied in place with strips of whip-cord—arrayed in these you

are in full court costume, ready to be presented to Majesty.

To reach the cave you circle down the cliff by an uncomfortable, small, winding staircase, of a sort familiar to sight-seers abroad. From this you presently emerge, out of breath, upon a ledge of rock, with the dark green waters of the river below and a vertical wall of granite towering above.

A mere score of steps brings you around a curve and puts before your sight the enormous sheet of water, vast in itself, but at Niagara insignificant and inconspicuous, which curtains the Cave of the Winds. About one hundred and fifty feet in height, and as much in breadth, it descends between Goat Island and Luna Island. It has no special name, and the ordinary visitor to Niagara will hardly realize its separate existence. Our English cousins who do not go behind it may respect it more if they are told that it leaves the sky at the height of the top of the western towers of Canterbury or of Durham Cathedral, and that it has twice the width of the main façade of either. If they have ever been behind they will need no details to ensure re-

spect. We see it first in profile, a long, curving edge of green and white, not so much falling from the brink above as leaping, with a forward plunge, so that between its inner wall and the retreating surface of the cliff is left a strange gray cavern, now to be explored.

I have been through the cave more than a score of times, but no number of trips can ever dull or in any degree displace in my mind the impressions of the first visit. In quiet ignorance of what was to come, I approached the precipitous wooden staircase which descends behind the fall. Looking across I saw a patch of blue sky at the farther outlet of the cave, but elsewhere the air was dark with criss-crossed blasts of sleet, hurtling in all directions like frightened comets. A second later the battery of the fall was on my head and all the Powers of the Air were at my throat. Around my feet a rainbow formed a ring through which I seemed to drop into blackness. The staircase stopped and I was on a narrow ledge of rock, with no more path or rail, hugging a slippery wall of stone. The water clutched my feet furiously. Neither the burly guide nor the stranger who had accom-

panied me was to be seen. I started to go forward, but as I turned a mass of water struck me breathless. I tried to find the stairs, but a worse dash of water from the other side outdid the first. Facing the wall again I waited, perhaps thirty seconds, wondering, when suddenly the guide appeared with the frightened Frenchman whom he had pursued and recaptured. It was a lonesome introduction to the place, but we moved on now together through the water, clinging desperately with our toes through the felt to whatever foothold we could discover, and glad to have the support of hands as well as feet. Dignity in such a place, and such a costume, is the last thing to be considered. Half blinded, quite deafened, gasping—the agitation of the nerves is too great at first for observation; but soon the eye learns how to follow the curving inner surface of the falling water, half translucent and of shifting colors, far up to where it leaves the line of the cliff above. It learns to overcome the twilight and gather outlines of black, terraced rocks, dripping with streams of sleet, that form the amphitheatre of the cave. You learn to step fearlessly into the churning

water, towards the Fall, knowing that the rebound of the cataract is so violent that even if you lost your footing you would only be thrust roughly back against the terraces. It is soon over. A brief climb up the ledges brings you to dry rock and the bright sun again, but you have seen a cave of Æolus such as Virgil never dreamed of. Henceforth the lines in the opening pages of the Æneid:

Hic vasto rex Æolus antro
Luctantes ventos vinclis et carcere frenat,

will have new meaning.

A clever writer once said that the cave was like a small choky corridor with the deluge going on inside it, and he marvelled greatly that the end of his trip coincided with the point of departure instead of occurring *in transitu*. It is alarming but not dangerous, and accidents are almost unheard of. Women frequently go through the cave as well as men.

There is no surer way to take the conceit out of a complacent cockney who affects to look down on Niagara than to make him run this gauntlet. I think always of Emerson's lines on Monadnoc:

Photograph by Edmund R. Hardy.

ENTRANCE TO THE CAVE OF THE WINDS.

Pants up hither the spruce clerk
From South Cove and City Wharf,
I take him up my rugged sides,
Half repentant, scant of breath,—
. . . . . .
I scowl on him with my cloud,
With my north wind chill his blood;
I lame him clattering down the rocks;
And to live he is in fear.
Then, at last, I let him down
Once more into his dapper town,
To chatter, frightened, to his clan
And forget me if he can.

The passage through the cave is an experience too grim and colorless for pure pleasure, but the return across the rocks in front of the fall—in a bright sun—is a luxury of delight. The heart that "leaps up when it beholds a rainbow in the sky" will here be in a dancing fever of excitement, for there are whole rainbows, half rainbows, and quarter rainbows, not in the sky, distant and inaccessible, but in your fingers, around your head, and between your feet, while the pot of gold at the rainbow's foot is a caldron of molten silver, foaming and rushing about your knees, and tugging at you with an invitation that is irresis-

tible. I have seen grave men frolic in the water, their trousers and sleeves swelled almost to bursting with the imprisoned air; now clinching their toes firmly in some crevice and leaning back with all their force against the cushion of water that rocked them like a cradle; now crouching low with arms akimbo while the interrupted stream sprang high above their heads in an arching curve, like a sea shell around a naiad; now thrusting themselves into invisibility against some rock over which the torrent broke in a noisy cascade—their heads safe in the airhole near the crest, from which they dimly watched the passing figures in their oilskins, until they chose to startle them by reappearing. To play so with Niagara brings an exhilaration that is indescribable. It "washes brain and heart clean" and gives a child's courage for the tasks of the world. The exaltation is heightened by the heavy roar of the cataract close above you, and the brilliant beauty of color all around you. You climb through one circular rainbow to the top of a black boulder and descend through another on the other side; you cross slippery wooden bridges, exposed to such furi-

ous castigation from the sleet that you bend involuntarily in homage to the fearful power of your recent playfellow. Most glorious of all, whenever for a moment the eye is not so buffeted by driving spray as to deprive you entirely of your vision, look upwards, always upwards—where the flashing peaks of the American Fall tower above the deluge like the snowy summits of a mountain chain.

> In such access of mind, in such high hour
> Of visitation from the living God,
> Thought is not, in enjoyment it expires,—
> Rapt into still communion that transcends
> The imperfect offices of prayer and praise.

II.

THE MAID OF THE MIST.

Everywhere at Niagara the genius of the place has many moods. Often at the Cave of the Winds there is not a rainbow; sometimes when the spray beats down the river you can even enter the cave without a wetting. It may take twenty trips to see all its splendor, but fully to see it is worth them all. I know of

nothing in Nature to be compared with it. The valley of the Rhone Glacier at dusk, when the white frozen mass of ice falls silently at your feet from the sky, suggests it dimly, as the moon in daylight suggests the sun. For many, though, the pleasures of the cave are too robust. All such should still attempt to see Niagara first from below, and the next best way is from one of the twin steamers called the Maid of the Mist.

The approach is through Prospect Park, and by taking the central path to the inclined railway you can again reach the water's edge without so much as one glimpse of the Fall. As you come out of the house at the foot of the railway there is a territory at the left, full of attractions, but your way lies to the right. From the steamer landing you see a broad river of a dark green color, as placid and unruffled as if it had never known a struggle or a fall. Men swim in it with safety. Before you is the disappointing profile of the upper half of the American Fall. The lower half is hid by rocks and spray. Slip on one of the rubber cloaks in the saloon, take a rubber blanket, and rush forward to the

choice seats at the front. As the steamer moves sturdily forward, still through smooth green water, the air begins to fill with a soft spray, as fine and penetrating as a Scotch mist, and the water is t'nickly overlaid with foam. You coast along the one thousand and sixty feet of the American Fall, close to the rocks below and so very close to the Fall itself that it is almost terrifying. Nothing is distinctly seen, for the eyes blink in the beating rain. You can see better if you wear glasses; the wet dims them, but you can at least keep your eyes open more steadily. Nothing is distinctly heard. The deep note of Niagara sounds in your ears with a heavy throb that is almost painful. You are confronted by a rippling, flashing, shimmering wall of white, a precipice of falling foam, furrowed in deep creases by the uneven contour of the brink, and rebounding high in a leaping cloud of spray that always hides the base from every eye. Near the steamer are many boulders; the largest the Rock of Ages that stands before the entrance to the Cave of the Winds. Then come the bare cliffs of Goat Island, another thousand feet or more; and then—the Horse-

shoe. Its lofty, curving walls confront each other, one hundred and sixty feet in height, and in their contour fully three thousand feet, or more than half a mile. The plucky Maid pushes straight into this pit of falling waters; forward she goes, into its depths, until for an instant, for one short second, there is nothing to the right, to the left, or before, nothing anywhere in the whole world for you but the enclosing cataracts falling on all sides from the sky. It is just one second of crowded, glorious life, worth a year's pilgrimage. The little steamer has gone as far as the full force of her engines will carry her; she lurches heavily, tosses like a cork on the white surging foam, and wheels suddenly around. Then, gradually, you realize that the climax is to be repeated. Once more the Maid pushes steadily through the churning froth, straight for the vortex of the Horseshoe; once more the white cataracts surround you, and then the Maid gives up the hopeless struggle, wheels heavily again, and shoots like an arrow down the stream and away.

The views now are from the stern; first of the rapidly receding Horseshoe, then of Goat

Island, then of the American Fall as we coast again along its length, nearly as close as before, and finally, from the Canadian dock, a beautiful panorama of both Falls. From here the boat returns to the American landing, but the tourist's best plan is to go ashore, take the inclined railway up the Canadian bank, or climb the winding road, and then walk or ride along the crest of the cliff to Inspiration Point and to the former site of Table Rock.

III.

CANADA—THE HORSESHOE—THE DUFFERINS.

It is disappointing to the patriotic soul, but not to be disputed, that the finest views of Niagara are to be had on the Canadian side. Perhaps there is more variety of beauty in the American park than in the other; Goat Island, the Three Sisters, Prospect Park, the Rapids, and the River Road are all exceedingly beautiful; but when you have seen it all there is no place to which you come back so eagerly for inspiration as to Table Rock on the Canadian shore.

Queen Victoria Park.

The Queen Victoria Park was established in 1888, or three years after the State of New York had purchased Goat Island and the land on the American side, and dedicated it to its people. Here and there are trifling indications of the different temper of the governments on either bank. Take for instance the governmental signboards with their warning notices, which in Canada are less considerate of the tender feelings of the dear public than with us. Mark the autocratic barbarity of the British declaration that persons throwing stones over the bank will be prosecuted according to law, as compared with the exquisite delicacy of the placards that meet you at every turn on Goat Island: "Do Not Venture in Dangerous Places"; "Do Not Harm the Trees and Shrubs"; "*Stones Thrown Over the Bank May Fall upon People Below.*"

The Queen Victoria Park is much more trig than its neighbor. It has flower beds and close clipped lawns, rustic arbors, and wigwams, busts of notables, and even fountains! In the State Reservation, on the contrary, the

more important portions are in a condition almost primeval.

It is well to remind the visitor that in distributing his time the hours given to the Canadian park should be in the afternoon. At Niagara, Canada is the land of the setting sun, and it is only in the afternoon that the superb bows can be seen which rise high in the sky, sometimes over-arching both Falls in a single curve. It is the other shore which is distinctly Rainbow Land. Give only the sun, and on the American shore the wise pilgrim can have his rainbow, be it morning or be it afternoon. In the morning at Prospect Park, if the day is bright, one rainbow is certain, two are usual, and to see three concentric bows, each reversing the colors of its neighbor, is not uncommon. At the brink of the Horseshoe it is the same, while in the afternoon I know of no more beautiful sight at Niagara than the view of Luna Island and the great American Fall, framed by an iridescent bow. It is a spectacle not to be missed.

Suppose, then, that it is the afternoon. You make your way along the Canadian shore towards Inspiration Point, and what we still call

Table Rock, though the last vestige of the rock itself fell over forty years ago. You find at once that here the railroad has entered Paradise. The tracks of an electric road accompany you all the way. It was built in 1892, and runs along the whole Niagara gorge from Queenston, seven miles below, to the placid beauty of the Dufferin Islands, where iron railroad bridges now run side by side with all the older ones of inoffensive wood. The world must move. Electric cars run from The Hague to the bathing houses of Scheveningen. They run even from Florence up to Fiesole, and how can Niagara be spared! They are necessary and laudable, but as unattractive to the eye as the cheap books that have opened literature to the million.

Below Inspiration Point the view may possibly be disappointing, but from this point on it is difficult for one who knows the place to see how even a newcomer can fail to be most powerfully impressed, especially if the conviction of the height of Niagara has been first well driven home by a journey through the Cave or on the steamer. Still, a Bostonian looked first from here and promptly wished to

improve on Nature by removing the barren wall of Goat Island, so that there should be one continuous fall. A more legitimate source of disappointment is due to the heavy spray. Over and over travellers brought with care to Table Rock for their first view, open their eyes to see only an invisible Niagara, both American Fall and the Horseshoe being veiled completely by a loud, thundering cloud of mist.

The Horseshoe Fall.

As you advance towards the Horseshoe, and see farther and farther into its white recesses, until, at Table Rock, you are admitted almost to the heart of its secrets, the sensation of awe in the presence of such majesty is irresistible. You stand at one limit of the vast curve. Your eye traverses the whole extent of the silent sheets of plunging water, and follows them downward to the milky sea beneath. From below rise such enormous clouds of shifting spray that at times all outlines are confused. The vagueness magnifies each distance, and through the blur the opposite crest seems infinitely far away, and the chasm bot-

tomless. The effect is all of white and gray, and yet conspicuous before you is the great Green Water, the one place where the flood of Niagara does not break instantly into foam but clings together in a solid sheet that descends for many feet unbroken, exhibiting the exquisite color of the green deep sea. The water nearer is sometimes turbid and yellow. Everywhere its surface has a waxen, sheeny glaze that is characteristic of Niagara. At the convergence of the two opposite faces of the cataract the confusion of waters is indescribable. Above all mounts the white column of spray that seems to

"Rise like a cloud of incense from the earth."

The man or woman here who does not descend to the foot of the precipice commits a sin unpardonable. Fear may forbid the Cave of the Winds, or even the Maid of the Mist, but here you have firm Mother-earth to stand on. If the whim of the wind allows you dry rocks you can lie at your ease in the sun and drink in almost the view which the prow of the steamer presents for a second and then snatches from you. You are in the same white

Photographs by Orrin E. Dunlap.

THE HORSESHOE FROM THE MAID OF THE MIST.

pit of downward rushing walls. You have almost the same sense of having conquered the inaccessible, of having invaded sanctity. It is like the disembodied joys of spirits.

Mr. Howells speaks in his book of the *repose* of Niagara. Another paradox is its silence. The sheets of falling water are so unchanging to the eye that the motion seems no more actual than when the breeze runs through a field of grain. It moves without moving. In some such way the unchanging volume of sound soon leaves on the ear a strange sense of silence. Now and again, however, as some more compact mass of water makes its fall, a new note strikes the ear, and under all is the heavy beating of the air as if of sound too low for the range of human hearing. It has always seemed to me as if much of the voice of Niagara might be to us inaudible.*

It is strange that no great poem has yet been written for Niagara. Many have tried their hand, but there is nothing of established fame, nothing that is known for itself as well

* In "Scribner's Magazine" for February, 1881, there is an article on "The Music of Niagara," by Eugene M. Thayer. He writes the chords of its different harmonies, but finds them *four octaves* lower than the keyboards of our pianos.

as for its subject. There is line after line, however, of Coleridge's Hymn to Mont Blanc which if once thought of at Niagara will be always thought of there. Verse after verse is curiously apposite. Those who have never made the translation from mountain to cataract will find in it a wealth of new associations for both poem and place.

The waters at thy base
Rave ceaselessly ; but thou, most awful Form,
[Fallest] from forth thy silent sea of green,
How silently. . . . . .
O dread and silent [Fall !] I gazed upon thee
Till thou, still present to the bodily sense,
Didst vanish from my thought. Entranced in prayer
I worshipped the Invisible alone.

Yet like some sweet beguiling melody,
So sweet we know not we are listening to it,
Thou, the meanwhile, wast blending with my thought,—
Yea, with my life and life's own secret joy—
Till the dilating soul, enrapt, transfused,
Into the mighty vision passing—there,
As in her natural form, swelled vast to Heaven.

. . . . . .

Who gave you your invulnerable life,
Your strength, your speed, your fury, and your joy,

Unceasing thunder and eternal foam ?

. . . . . .

Who made you glorious as the gates of Heaven
Beneath the keen full moon ? Who bade the sun
Clothe you with rainbows ? Who, with living flowers
Of loveliest blue, spread garlands at your feet ?
God !—let the torrents, like a shout of nations,
Answer ! and let the ice-plains echo, God !

The Beautiful Dufferin Islands.

The Titans of Niagara have been presented. They are grand, beautiful, but overpowering. The strain on the sensations is so exhausting that to stay long with them is oppressive, and after looking your fill you are glad to withdraw to the more human pleasures of the islands.

One of the delights of Niagara is the constant alternation of tumult and peace, of majesty and winsomeness. Willow Island and Goat Island are full of sweet wood charm. On Goat Island, especially, you can quite forget Niagara, although all the time its nearness induces an exaltation of spirit which enhances the restful beauty of the forest.

The Dufferin Islands, on the Canadian

shore a mile above the Horseshoe, have a unique quality which cannot easily be stated. They are the perfection of rustic loveliness, and the approach is hardly less lovely.

If you take the electric road, or even the carriageway, to the Dufferins, you will miss much beauty; but the distance is more than a mile, so that it may be necessary. The foot-path is best, for it follows the water's edge, climbing the slope of the rapids, a green bowered path, with the big, breezy river at the left. At intervals are rustic seats from which you can watch the turmoil so near you, and the intricate tossing of the breakers.

Here, as everywhere at Niagara, a bicycle is the ideal vehicle. It lifts you from the earth, spiritually and physically; you have not the sight of the horses nor the noise of their hoofs to distract you; and you can have the intimate beauty of the footpaths without the weariness of the magnificent distances. A bicycle day at Niagara is an unforgettable pleasure, and no part of it more so than the ride up the winding path to the Dufferins.

Whether you approach by bicycle, by carriage, or by trolley, you see little of the islands

unless you leave your vehicle and explore the narrow paths.

First comes a swift river, about thirty feet wide, sweeping close against the hand-rail which guards the path. The river describes a semicircle, and the path by its side is at the base of steep, dense woods, and is so overhung with vines that you proceed through a succession of pergolas. Here and there weeping willows whip the stream incessantly with their trailing branches. After this circuit, or before it, you must by no means fail to wander through the mazes of the islands themselves. Wherever you turn you will find a tangled cluster of wooded islands, carpeted with thin gray sheets of rushing water, clear as a trout stream. Plank walks carry you dry shod through many places where all the dense vegetation springs not from earth, but from a film of swift, transparent water. This forest Venice, with its lovers' walks, and bowers, and platforms, is indescribably fascinating.

The Burning Spring.

Those who have ample time will find it worth while to visit also the burning spring

on the hill above the Dufferins. You are shown into a darkened room, where an outlet of natural gas is lighted on payment of a fee, and the tossing of the great flames is picturesque and beautiful.

IV.

THE RAPIDS AND PROSPECT PARK—GOAT ISLAND, LUNA ISLAND, THE THREE SISTERS.

It is late to speak of the famous rapids above the Goat Island bridge which, for many visitors, are the first thing seen at Niagara and the last forgotten. They do not equal the great rapids above the Whirlpool, seen from the Gorge Road, but they are a chief source of pleasure. To see them it is necessary, absolutely, to descend to one of the platforms at the river's edge. Unless you do so they have not been seen. Sit for at least ten minutes, watching, and the fascination will seize you irresistibly. It is like a great turmoil of tossing ostrich feathers, except that there is feverish life in these white plumes restlessly curling. There are tags of verse in the mind everywhere

at Niagara. The one that speaks to me here is from Matthew Arnold:

> Now the wild white horses play,
> Champ and chafe and toss in the spray.

And again:

> The wild white horses foam and fret,
> "Margaret! Margaret!"

In sunshine these rapids blaze from a distance like white fire and are intolerable to the eye. Although not so terrific as the lower rapids, they are perhaps as exciting because they are hastening towards doom instead of escaping from it. As we watch, the imagination inevitably includes the shuddering leap into space. They race madly towards disaster, and as you follow you share their impatience. You walk close at the river's edge, unprotected from the contagion of its motion, until you reach the brink at Prospect Park, where only a low stone rampart separates you from the Fall.

Prospect Park.

This is generally the first view seen by visitors, but, though fine, it is not the best.

The Falls are seen in profile so that the line of their length is foreshortened, and the height seems much less than when seen from below. It is well to insist on seeing Niagara first from its base; what we look down on never seems so great as what we must look up to.

The sight from Prospect Point is beautiful enough, however, and a favorite one to return to. If there is any sun there is always a rainbow in the morning, and at any time the great mass of shifting spray which cushions the falling waters will hold the eye prisoner. It seems as if some vast sea monster would emerge from it, as in "Schiller's Diver." At night especially it is mysterious and awful.

As you follow the rampart along the precipice the views change gradually. One of the best is labelled Father Hennepin's View. It is supposed to be the view seen in 1678 by Father Hennepin, a Jesuit missionary, and Chevalier de la Salle—the first white men who ever saw Niagara. The former writes of it as follows: "A vast and prodigious Cadence of Water which falls down after a surprising and astonishing manner, in so much that the Universe does not afford its parallel. . . . This

Wonderful Downfall is compounded of two cross streams of water, and two falls with an isle sloping along the middle of it. The waters which fall from this horrible precipice do foam and boyl after the most hideous manner imaginable; making an outrageous Noise, more terrible than that of thunder; for when the wind blows out of the South their dismal roaring may be heard more than Fifteen Leagues off."

Goat Island and Luna Island.

Those who fear the trip on the Maid of the Mist can cross from here to the Canada shore by the bridge; or, if Goat Island is taken next, it is but a few rods back to the Goat Island bridge. As we cross we have a fine view of the hill of the rapids on the left, while on the right we see the brink of the Fall. The American islands are anchored in the very centre of Niagara. First comes Bath Island, which is uninteresting, and then Goat Island itself, a famous treasure-house of delights. There are no more lovely forest roads or paths in the world than those on Goat Island, and Asa Gray, the botanist, tells us that there is hardly another

place in the world where so great a variety of trees and flowers can be found in so small an area. Goat Island is still covered with original forest, except for the carriageways and foot-paths that traverse it. That this is so is due no doubt to the fortunate fact that for generations all the Niagara islands, as well as part of the mainland, were owned by the wealthy family of Gen. Peter B. Porter, well known in the War of 1812. A summer hotel on the bank of Goat Island, overlooking the Horseshoe, would have been a source of enormous profit, but the sanctity of the place was always respected. A pleasant story is told of one of the family who was asked in England if she had ever seen Niagara Falls. Drawing herself up proudly, she quite annihilated her questioner with the unexpected answer: "Niagara Falls! I *own* them."

You circle round Goat Island by a shady road with cool forest depths on one side and on the other a steep, wooded bank with glimpses of the river through the leaves. A flight of steps leads down to Luna Island, and from its landings affords the finest view that is to be had of the American Fall. If you study

it closely you will find that there are subtle harmonies in the color of Niagara as well as in its music. The Fall is by no means only gray and white. If the sun favors, you will find at times faint tints of lavender, of rose, and green.

A low bridge leads directly over the roof of the Cave of the Winds to Luna Island. This bridge in winter is so thickly crusted with ice that as you cross your feet are almost level with the railing at the side. The island itself is so called from the lunar rainbow which is often seen from it in the spray—a mere dim ghost of a rainbow, hardly brighter than the third arch even of a solar bow. It is beautiful to see, but the beauty lies less in the bow itself than in its weird accompaniment of night shadows and moonlight. The island is small, and so flat upon the water that a trifle would submerge it. The shallow, transparent sheet of water that passes over the long, ragged edge of the American Fall is so near your feet that you can touch it as it leaves the brink.

In fact, everywhere the great accessibility of Niagara is strongly felt. It never holds you at arm's length. As you look down at

the huge clouds of smoky vapor you lean over a low parapet of stone along which the river brushes as it makes the plunge; and if you continue now along the Goat Island road to the Horseshoe you can paddle in the water at the very verge. There is never the tantalizing wish to get "a little nearer." Except for occasional dashes of spray, no monarch of Nature allows more absolute freedom of approach.

From Goat Island, the Horseshoe shows but one of its curving faces, but it is that which is crowned by the wonderful Green Water already mentioned. It is better seen from the bank above than from below. The rich green mass descends unbroken until it is lost to sight behind the nearer curve of the Fall. You see no chasm; merely two edges with a deep seam or scar between, broken at moments by a sudden, spurting leap of spray from the invisible depths, a silent messenger of the tumult below.

The Three Sister Islands.

The road leaves the Horseshoe. A broad, breezy view fills the eye, and presently appear the bridges of the Three Sister Islands. The

Photograph by Curtis.

THE THREE SISTER ISLANDS.

first bridge crosses a thin stream of water, so quiet that one would hardly be afraid to wade to the other side. There is no suggestion of the rush and roar of Niagara. The second stream is much more turbulent. The third, narrow but noisy, comes racing down the slope with breathless speed, and crashes immediately over a low parapet of rock with an uproar as of forty Niagaras. It is so little and so furious that it frightens you. It shakes the water into shreds and tatters and flings it down in a tangled heap of white motion, to pass on instantly without reprieve to the new fate beyond. It is like torture before death. A soft green dimple in the lower stream is all that marks the vortex of the Horseshoe into which the water plunges.

The small bridge quivers with the rush of water so close below it. This bridge and Prospect Park are said to be the favorite resorts of men intent on suicide, but those who care for life can hardly find a dearer lingering spot for a long summer's day than at the foot of this small torrent.

The Third Sister gives again the broad, free outlook on the river. Not far from the shore

is the Spouting Rock, or Leaping Horse, where the water shoots up at intervals in a dash of spray. A little clambering over the gnarled rocks of the island brings you to the water's edge, where you can look up the current to the horizon. By springing over a narrow gap you reach a boulder near the shore, on the farther side of which the water sweeps down a little glassy shoot shaped like a beaver's tail. Tiny white waves keep curling up it from below, trying to climb the slope. The pygmy army is unwearied in its attack, but, like Sisyphus, it toils upward in vain.

The carriage road and footpath lead from the Sisters to the Parting of the Waters at the upper end of Goat Island, where the river divides its mass for either Fall very quietly, with only a light ripple on the shore; and still farther is a glen known as "The Spring." Then come the bridges to the mainland, and the tour of Goat Island has been accomplished.

If you wish to taste again the constant alternation between peace and conflict which makes Niagara so bewildering, walk up the water's edge to a willow grove which is idyllic in its beauty; and if then you wish in full meas-

ure a benediction on your day, return to the hotel or train by the lovely River Road, which follows the bank in an easy curve that is a delight to the senses. It is but a moment longer, and I know of nothing that will leave so sweet a flavor in the mind.

V.

LOWER NIAGARA. THE WHIRLPOOL RAPIDS—THE WHIRLPOOL—THE GORGE ROAD TO LEWISTON AND QUEENSTON—BROCK'S MONUMENT, YOUNGSTOWN.

All that has been described—Cave of the Winds, Maid of the Mist, Dufferin Islands, and all—may be seen in a day by the abject slave to time. He will come away dazed, uncertain, almost, whether the cataract flows up or down, and unfit, utterly, to say a word in criticism, either of praise or blame. Still, if a day is all that life allows you, it is best to crowd it full. If not afraid of mental indigestion, the one-day tourist might make room in his day not only for all this, but for a glimpse, at least, of the wonderful Whirlpool Rapids. To see more

than this of lower Niagara, even in the most hasty fashion, a second day is indispensable, unless the Cave of the Winds, the Dufferins, or some other of the charms which surround the cataract, are sacrificed.

On the American shore the Niagara gorge can be traversed in several ways. There are three railroad tracks, above, below, and midway. The carriage road above is too far back from the brink to afford views, but the trains of the Rome, Watertown and Ogdensburg Railroad have some fine, distant outlooks. They are not specially arranged for sightseers, however, and are less desirable for scenic purposes than the trains of the New York Central, which carry open observation cars in summer through the gorge, from Niagara Falls to Lewiston. The tracks are half-way up the side of the cliff, and the ride is beautiful. The distance is about seven miles.

The Gorge Road.

Most tourists will prefer the round trip on the electric road, which has the advantage of giving you both shores, one from above, the other from the water's edge. On the Cana-

dian side the only road is the trolley, on top of the bank. The round trip takes over two hours and is usually taken on the Canadian side first, because of the fine views as you descend the mountain, looking towards Lake Ontario. It is a trip on no account to be missed if you can afford the time. It is best, if possible, to make many stops at the different stations on the line, especially at the Whirlpool Rapids.

The Upper Whirlpool Rapids.

These rapids, rather than the Whirlpool, are the feature of lower Niagara. They are wilder, finer, in every way more splendid than the rapids above the falls. On the Canadian side you descend by elevator to the rapids, but the American trolley road takes you directly by them. If you sit on the rocks, almost in the spray, you find a mass of roaring water, between high walls of rock, that leaps incredibly into the air. At times it spurts almost like a geyser, and from the bank will even hide from sight a low house on the other shore. It is the most infernal riot of mad waves that the mind can picture. Like Hamlet's players, in the

torrent, tempest, and whirlwind of their fury, they tear their passion to tatters, to very rags. They race past with a suicidal rage and violence which is terrifying. The place is one to linger at for hours and is one of the chief glories of the Falls.

The Whirlpool.

The Whirlpool also can be visited by those who have scant time, without taking the whole trip through the gorge. It is apt to disappoint the expectation, but all wish to see it. From the rapids, if you are adventurous, you can reach the Whirlpool by following the shore and climbing up the bank. If you are prudent, however, you will take the trolley or the carriage road. From above, as you look down over the bank, the first sensation is surprising, almost uncanny. Niagara is caught in a trap. It enters a circle without outlet. Your eye follows the whole contour and finds no interruption in the line of shore. From a few steps farther to the right you see below you the narrow gap through which the river turns, at a full right angle with its former course. It seems as if a girl could throw a

stone over, but men have tried and seen the stone land on the nearer shore, short even of the water's edge.

Those who expect to find a maelstrom in the Pool will be ludicrously taken by surprise. A country millpond is hardly more serene. The water circles lazily around its pen as if indifferent whether it escaped or not. Above the hole and below is the rattle of the rapids and the glitter of their white spray, but the Whirlpool itself is dark and still. When the first disappointment is over at not seeing the boiling, riotous whirl of the railway posters, you realize a silent strength and majesty that grow awful. It is not so hard to believe that what is once drawn down into its centre will not emerge for days.

To Queenston and Lewiston.

If you see only the Whirlpool Rapids and the Whirlpool you will get a good idea of the Niagara gorge, but the whole trip to Queenston and Lewiston should be taken if possible. The cars cross the bridge, a thread poised between two panoramas. Under the bridge on the American side you can see the outlet of the

power tunnel which is said to have "harnessed Niagara." The inlet of the tunnel is some distance above the Falls, and the vast power supplied is used both in Niagara Falls and in Buffalo.

From the Canadian end of the bridge the tracks keep close to the edge of the cliff so that you can look down at the green stream below; at times there are viaducts over deep gorges above the tree tops, and as you approach Brock's Monument and descend rapidly into the quaint little village of Queenston the view of Lake Ontario in the distance is superb. It is worth while to leave the car and enjoy the view until the next car arrives.

After crossing from Queenston to Lewiston the cars return, following the edge of the stream. It is a dramatic, magnificent ride, but it passes too quickly for the fullest pleasure. No one should fail to get off and linger at the Upper Whirlpool Rapids.

Niagara-on-the-Lake and Youngstown. Toronto.

The beauty of the river continues all the way to its mouth at Lake Ontario. Niagara-on-

Photograph by Orrin E. Dunlap.

QUEENSTON AND LEWISTON.—END OF THE GORGE.

(Lake Ontario in the distance.)

the-Lake and Youngstown are six miles below Queenston and Lewiston. There is an especially good hotel at the former, but possibly Queenston is more picturesque and interesting. At both there are forts and military stations, and the scarlet coats of the British soldiers are seen at the Canadian post. Near Lake Ontario the river is no longer shut in a gorge, but is ample and splendid, with finely wooded banks and a carriage road on either side from which the views are ravishing. The road is sandy on the Youngstown side, but for pedestrians or bicyclers there are side paths close to the edge, and the trip is of unforgettable beauty. It is by no means inferior among Niagara's pleasures, and the visitor from inland especially will enjoy the broad expanse of the waters of Ontario. Looking from the walls of Fort Niagara at Youngstown even the lover of the ocean will find nothing lacking. From either Youngstown or Niagara steamers can be taken for the trip across the lake to Toronto.

VI.

SEASONS AND MOODS—THE ICE BRIDGE—TRAMPS, STROLLS, AND RESTING PLACES—THE BICYCLER.

The perfect time for the trip to Lewiston is in October. The Canadian bank is then a blaze of flame, and the green river below and blue sky above make a beautiful color picture. The most lovely time for upper Niagara is in early spring, when Goat Island is covered with flowers and the trees show every tender shade of green. The most wonderful season is undoubtedly mid-winter.

Niagara in winter is like a fairy tale come true. The spray gathers and freezes so incessantly that twigs the size of knitting needles are cased with ice until they have the bigness of a squirrel's tail. The trees seem all of ice, and their wood seems only a stick to which these ice trees are tied for support. Whole bushes are covered with a heavy splendor which, like heavy splendor elsewhere, pins them to the earth or even breaks them down. A low sun flashing through this ice turns it to

jewels. It is as if the rainbows of Niagara were flung before you in a tangled heap. In a light wind the rattle of the trees is most unlike the soft murmur of summer. It is rheumatic and wheezy, like opulent old age, covered with diamonds.

There are huge icicles like stalactites on the cliffs which rise from the river. Many of them are discolored and show strong tints of yellow and blue.

Below the American Fall the ice cone gathers and grows to the height of seventy-five or even of a hundred feet. Men climb it with spiked shoes and coast fearlessly down. The freezing spray covers your hat with enamel and makes your overcoat a rigid board.

The Ice Bridge.

In most years a so-called ice bridge forms. A warm day melts the field of ice above the Falls. It crashes down and chokes together in the narrow gorge below, forming an ice floe like a bridge from shore to shore. This bridge becomes a second Ponte Vecchio. It is lined at once on either side by mushroom booths where peddlers sell their wares. They

take your tintype with Niagara for a background, but those who lend themselves to such an insult to the place are usually satisfied to sit before a hideous pasteboard scene although Niagara itself is close at hand. The merchants deal in foreign liquor upon the doubtful international line.

The ice bridge in itself is only this, and those who expect an arching span will be disappointed. It is its association with the winter scenery, and the vantage ground it gives for novel points of view, that make it well worth seeing. In winter usually you miss the charm of lazy summer lingering, but on the ice bridge you change the fleeting views the Maid of the Mist affords for ones more at your ease. You walk sturdily where you will, and look till you are satisfied. The pleasure, too, is greater at the water's edge than on the deck of a steamer. For this reason in summer it is pleasantest to cross by a small rowboat that ferries passengers.

Moods.

It is not only the seasons that change the aspect of Niagara. In fact, it differs every day

in mood. You cannot go twice to the same place without seeing some new thing. One day you can climb higher than ever before upon the rocks at the base of Prospect Park until you sit dry in the shadow of the American Fall, fairly behind its sheet. Another day you cannot put your head outside of the house at the foot of the inclined railway without meeting a blinding shower of spray from the same Fall that makes any visit to the rocks impossible. These changes of the spray occur with disconcerting suddenness, especially below. The wind whips suddenly around the compass, and before you think, lashes the spray at your face. I have seen a girl who was standing too near the Fall drenched instantly with a rush of spray. Even when above a little wetting often comes.

These are the natural aspects of Niagara. To see it in more unfamiliar, curious beauty, as only one in hundreds cares to do, walk by summer moonlight through the Lewiston gorge or see the Horseshoe by the winter moon.

Tramps, Resting Places—The Bicycler.

To catalogue the pleasures of Niagara and not describe the many tramps it offers would be a mistake. The shortest and perhaps the best is down the gorge to Lewiston, about five miles, a pleasant journey for an afternoon. Begin not at Niagara, but at Suspension Bridge. Two miles of country road lead to the Devil's Hole, the scene in 1765 of a massacre of English by the French and Indians who are said to have forced them down the cliff. Upon a broad plateau of rocks you look down on the tops of trees that fill the pit below. The rapids of the river spot its dark green surface with white, and their clamor is always in the air. A few steps farther on you leave the road, from which there are no views, and take the railroad track, a ledge half-way up the side of the cliff, with a sheer mountain of rocks above and the wonderful river talking loudly below. Keep on the track to Lewiston and then come back by train.

If you have a whole day's time and can stand a more vigorous walk, begin on the Canadian side of the Suspension Bridge, walk

by the road to the Whirlpool, crawl around its circling beach over ground thick with petrified leaves, and when you reach the outlet climb somehow up the bluff and keep to the brink until you reach Brock's Monument and Queenston. It is about seven miles, and if you are rowed across at the Queenston ferry and come back up the railroad track from Lewiston you will have had a glorious day. The walk along the Canadian brink is tangled and rough, and often lengthened by retreating gorges which have to be skirted, but the views are beautiful. There are many jutting bluffs, and in the gorges are fantastic boulders. Upon the hill below the monument to General Brock you look far off to Lake Ontario; it is another place for a day's resting.

If you take this for an epilogue to Niagara you may like also a prologue. There is no pleasanter approach than to walk or drive from Buffalo on the Canadian shore. The distance is not more than twenty miles and the road is almost always at the river's edge, almost upon the beach. It is rough riding for a bicycle, but beautiful enough to repay much jolting. The advantage of this approach is its

suddenness. During the last miles of the journey you see the spray of Niagara before you, but you get no glimpse of the cataract until, at the Horseshoe, the finest single view of Niagara is suddenly disclosed.

On the American side you can go as far as Tonawanda by the tow path, which is beautiful but not smooth, and from there by cinder path to the Falls.

Goat Island is a wheelman's paradise, and so is the bowered path to the Dufferins. From Lewiston or Queenston to Lake Ontario is also a fascinating trip by bicycle. You can ferry over at the river's mouth. Grand Island also has pleasant walks and bicycle rides, and if the trip to Niagara includes Buffalo, the city will be found to be practically all paved with asphalt and thronged with bicycles, even in its busiest downtown streets.

If you want a place to which you can take a book for a long afternoon or morning, there is none more accessible or pleasanter than Willow Island, which is just above the Goat Island bridge on the mainland. Other resting places are the forest depths of Goat Island, the Second and Third Sister Islands, or the Duf-

Photograph by Orrin E. Dunlap.

PROSPECT POINT.

ferins; and in lower Niagara the rocks by the Whirlpool Rapids, or the hillside below Brock's Monument.

VII.

To read too much of a place before seeing it is to prepare the way for disappointment. Unconsciously you expect to crowd into the first impression all the finest aspects of repeated visits made by others in their happiest moods. You are in danger, too, of displacing your own natural sensations by others ready made. A descriptive guide book stunts perception as often as it stimulates it. The purpose of this sketch lies in the hope that, just as a word may kindle memories and enrich itself in the mind of the hearer, these details may serve for a nucleus around which the scattering recollections of the place may gather more distinctly.

One final word. If after all, with all the time you have, Niagara disappoints you, pray have the grace to remember that the fault may be your own. In a sense you can see in it only what you bring with you. As has been said,

if no man is a hero to his valet it is not perhaps because the hero is no hero, but because the valet is only a valet.

ONE DAY AT NIAGARA.

Tourists may find these programmes for a single day serviceable:

A.—*Morning:* Prospect Park; Maid of the Mist; Horseshoe; Dufferin Islands.

Afternoon: Goat Island; Whirlpool Rapids or Cave of the Winds.

In detail: From the train walk down Second Street to the river and follow the water's edge to the brink at Prospect Park (½ mile); from there take the inclined railway to the foot of the Falls and cross to Canada by the Maid of the Mist (50 cents), or by the bridge (10 cents), if you are timid. *Walk* to the Horseshoe (½ mile); walk or take the electric car to the Dufferin Islands, and walk among the islands; return by car. In the afternoon walk or ride around Goat Island (2½ miles around); turn to the right after crossing the bridge from the mainland, and after reaching the Three Sister Islands return by wood path across the island. The Cave of the Winds ($1) is reached from Goat Island; the Whirlpool Rapids by electric car from Falls Street.

B.—*Morning:* Prospect Park; Maid of the Mist; Horseshoe; Goat Island.

Afternoon: The Gorge Road, including Whirlpool Rapids and Whirlpool.

In detail: The morning trip is described in A. For the Gorge Road, take the electric car over the bridge and down the Canadian bank to Queenston, returning on American side (2½ hours). Stop over at Whirlpool and Whirlpool Rapids on American side.

C.—*Morning:* Cave of the Winds; Goat Island; Prospect Park; Maid of the Mist, or bridge, to Canada; Horseshoe; Dufferin Islands.

Afternoon: The Gorge Road, including Whirlpool Rapids and Whirlpool.

It would be much better to divide this into two days; or to omit the Gorge Road and take the Maid of the Mist, Horseshoe and Dufferins in the afternoon.

STATISTICS.

Niagara. Said to be an Iroquois word, meaning "Thunderer of Waters."

Niagara River.

Width, above the Falls, about 4,400 feet;

below the Falls, about 1,000 feet; at the Whirlpool, about 400 feet.

Length of river, from Lake Erie to Lake Ontario, 36 miles.

Descent, from lake to lake, 336 feet, as follows: from Lake Erie to the Falls (22 miles), 70 feet (55 feet of this in the Rapids, ½ mile); at the Falls, 160 feet; from the Falls to Lake Ontario (14 miles), 106 feet.

Current, estimated at from 4 miles per hour in the quietest places to 40 miles at the Whirlpool Rapids.

Depth, estimated at 20 feet in the river above the Falls; at the Whirlpool Rapids, 250 feet; in the Whirlpool, 400 feet.

Volume. Estimated that 15,000,000 cubic feet of water per minute pass over the Falls, or about one cubic mile per week.

Niagara Falls.

Width of Falls at the brink, including Goat Island, 5,370 feet, as follows: American Falls, 1,060 feet; Goat Island, about 1,300 feet; the Horseshoe, in 1890, 3,010 feet.

The Horseshoe Falls.

Height, 158 feet. Contour, in 1890, 3,010

feet; in 1886, 2,600 feet; in 1842, 2,260 feet. Width across, at widest point, about 1,200 feet. Depth of water at brink, estimated, 20 feet.

Average annual recession, 2.18 feet; total recession from 1842 to 1890, 104½ feet. Total area of recession for the same 48 years, 6⅓ acres.

The American Fall.

Height, 167 feet. Contour, in 1890, 1,060 feet; in 1842, 1080 feet. Average annual recession, 7½ inches; total recession from 1842 to 1890, 30¾ feet. Total area of recession for same period, ¾ acre.

The New York State Reservation.

Area, 107 acres. Purchased by the State of New York, under Acts of April 30, 1883, and April 30, 1885, for $1,433,429.50; formally opened to the public July 15, 1885.

The Queen Victoria Niagara Falls Park.

Area, 154 acres. Preliminary Act of Legislature passed 1885. Park opened to the public, May 24, 1888.

Goat Island.

Area, about 63 acres; in early records said

to have contained 250 acres. (Gull Island, south of Goat Island, is said to have contained two acres of land in 1840. There is hardly a trace of it now.) Circumference of island, about one mile. First bridge built, 1817; another bridge, 1856; present bridge, 1900-1901.

Bridges to Three Sister Islands built 1868.

The price paid by the State of New York for Goat Island and all the surrounding islands except a part of Bath Island, was $525,000.00.

Suspension Bridge.

Height of floor above river, 190 feet; height of towers, 100 feet; length of span, 1,268 feet. First built, 1868-69; blown down and rebuilt, 1889.

Steamers Maid of the Mist.

First boat built and run, 1846. Larger boat built, 1854. Ran the Whirlpool and Rapids to Lewiston, to escape the sheriff, 1861. First of present boats launched, 1885, 71 feet long; second launched, 1892, 85 feet long.

CHARGES.

Within New York State Reservation.

Inclined Railway, Prospect Park. Either way, 5 cents. Stairs free.

Steamers Maid of the Mist, with rubber coat, 50 cents.

Cave of the Winds, guide and dress, $1.00.

Within Canadian Reservation.

Behind Horseshoe Falls, with guide and dress, 50 cents.

Dufferin Islands, 50 cents for carriage and all occupants, 10 cents for pedestrian.

Steel Arch Bridges.

Upper bridge, over and back, 15 cents; one way, 10 cents. Lower bridge, two miles below, over and back, 10 cents.

Whirlpool.

American or Canadian side, 50 cents.

Whirlpool Rapids.

American or Canadian side, with elevator, 50 cents.

Brock's Monument, 185 feet high; built, 1853. A former monument, 126 feet high, built in 1826, was destroyed by explosion in

1840. General Brock fell in 1813. Admission to top of monument, 50 cents.

CARRIAGE HIRE.

New York Reservation Omnibuses.

Round trip, including circuit of Goat Island, with stop-overs, 25 cents. Shorter trips, with stop-overs, 15 cents. Children under twelve years, half fare. Children under five years, free.

Carriage Rates by Niagara Falls Ordinances.

Two horses: first hour, $2.00; each additional hour, $1.50. One horse: first hour, $1.50; each additional hour, $1.00.

BELT LINE TROLLEY.

From Niagara Falls to Queenston along the Canadian bank, returning via Lewiston and the Gorge, $1.00.

GORGE RAILROAD.

Round trip, Niagara Falls to Lewiston and return, 75 cents; one way, 50 cents.

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SEARCHLIGHT IN THE GORGE.

DRAMATIC INCIDENTS.

By Orrin E. Dunlap.

The numerous strange features of the Niagara region have resulted in the development of many remarkable incidents, all of which are a part of the history of the locality and thoroughly interesting as going to show how the human mind, impelled by unusual conditions, is led to attempt deeds of daring for dollars and notoriety. For nearly a century Niagara has been rich in such incidents, and the records show that in some cases human life has been sacrificed in the general desire for gain, while in other cases the public has had opportunity to applaud the living heroes.

During the final twenty years of the last century the efforts to attain notoriety through some Niagara feat were perhaps more frequent than ever before, but as far back as 1827, Niagara was recognized as an ideal place

where great crowds might be assembled by thrilling incidents. About the first feature of this character was the sending of

THE PIRATE MICHIGAN

over the Falls on the afternoon of September 8, 1827. This vessel was at the time one of the largest of her class, but had been condemned by her owners as unfit to longer sail the lakes. Dressed as a pirate, she was loaded with wild and tame animals, and with a crew in effigy, was towed to the foot of Navy Island and set adrift. She was caught by the current and hurled through the upper rapids and over the Horseshoe Fall. It was never recorded that any of the animals were recaptured to be sent to the museums in New York, Montreal, and London, as was the intention. Coaches left Buffalo on the afternoon of the 7th of September to accommodate the crowds, and all of the Niagara hotels were full of guests.

SAM PATCH.

Among the crowd drawn to the Falls by this incident was Sam Patch, a man who had won

fame at Pawtucket Falls and other eastern points as a high jumper. He erected a platform at the water's edge of the *débris* slope just north of the Biddle Stairs, and from this platform leaped into the river, the height of the jump being about ninety feet. Patch was considered a wonder, but shortly after his Niagara experience he lost his life in a leap from the Genesee Fall in Rochester.

FRANCIS ABBOTT.

While Francis Abbott never sought fame, or even recognition, at Niagara, he won for himself a place in the history of the Falls that will stand forever. He was known as the "Hermit of Niagara." Of brilliant mind, musical, he sought the sublimity of the cataract to live alone and commune with Nature. He lived on Goat Island and also in the section now known as Prospect Park. It was his custom to bathe daily in the river, and on Friday, June 10, 1831, he was drowned. His body was recovered June 21, 1831, and is buried in Oakwood Cemetery at the Falls.

DISCOVERY OF THE CAVE OF THE WINDS.

There is no doubt but what the discovery of the Cave of the Winds marked a new era in the enjoyment of visitors to Niagara. The day of the discovery of this wonderful cave was July 15, 1834. H. A. Parsons had made heroic efforts to reach the cave by passing through the stream from the Centre Fall, when B. H. White and G. W. Sims succeeded in crossing the water and rocks and entered the cave, and to them is due the credit for the discovery. When first entered, the cave was the home of many eels.

BURNING OF THE CAROLINE.

At the close of 1837 Canada was aflame with the Patriot war. The headquarters of the Patriots was on Navy Island, a short distance above the Falls. On the Canadian shore, about Chippewa Creek, the British were gathered. The steamer Caroline was in service on the upper river, and had made two trips from the New York shore to Navy Island. The British, feeling the boat was carrying supplies to the

Patriots, organized a volunteer expedition, and at midnight on December 29, 1837, crossed the river to Schlosser Dock, where the Caroline was moored for the night, and cut her ropes, setting her adrift on the current. She was also set on fire, and all ablaze, she was carried down the river towards the Falls.

WHEN NIAGARA RAN DRY.

The winter of 1847-48 was of extraordinary severity. Very heavy ice formed in Lake Erie. During the latter part of March this ice field was broken by a thaw and wind. The wind swept the ice into the entrance of the Niagara River at Buffalo, where it jammed in a solid mass, completely choking the outlet of Lake Erie, the result being that on March 29, 1848, the Falls of Niagara was practically dry. The spectacle was weird in the extreme, and lasted throughout the day, the scene being one of desolation.

FALL OF TABLE ROCK.

This incident is usually referred to as having occurred on June 26, 1850, when a piece 200

by 260 feet fell with a terrible crash. This undoubtedly was the passing of the Table Rock known to the majority of Niagara visitors, but the fact is that, in July, 1818, a big piece of the rock fell, while in December, 1828, and in 1829 other pieces of the rock gave way.

TRIP OF THE MAID OF THE MIST.

One of the most daring feats ever performed at Niagara was that of Joel Robinson and his two associates, MacIntyre and Jones, on June 6, 1861, when they voyaged through the Whirlpool Rapids in the steamer Maid of the Mist. The boat was libelled and mortgaged to such an extent that the waters of the Niagara were too warm for her, and Robinson agreed to deliver her at a Canadian lake port. On the afternoon of the day mentioned, to the surprise of all who saw the boat, instead of heading over her usual course up the river, her bow was directed right into the rapids, with the waves of which she was soon battling. It was the first trip of the kind ever made, but under a full head of steam she made the trip in safety, the stack being swept away in the seething

waters. Robinson was born in Springfield, Mass. He died in 1863.

CAPTAIN WEBB'S FATAL SWIM.

With the advent of Capt. Matthew Webb to Niagara, a new impetus was given to navigation of the Whirlpool Rapids. Captain Webb had won fame and glory in European waters, and he sought to add to his laurels by swimming the Niagara rapids unprotected by any life-saving device. The date of his fatal trip was July 24, 1883. Right on time, he left his hotel, the Clifton House, since destroyed by fire, at four o'clock. Entering a small boat, with Jack McCloy at the oars, he was carried to a point on the lower river several hundred feet above the lower bridges. It was 4.25 P.M. when he leaped from the boat into the water, and with nothing on but a pair of red trunks, swam boldly towards the rapids. On the banks and bridges thousands of people were gathered, for the event had been well heralded. At 4.32 P.M. he passed under the bridges. His stroke was beautiful. In three minutes more he had reached the fiercest part of the rapids. A great wave struck him. He disappeared from

sight of all. Thousands of eyes watched the boiling waters, praying that his life might be spared. Four days went by, and some said Webb was in hiding so that advantageous bets might be made by his friends in England, but at midday July 28, 1883, his lifeless body was picked up seven miles down the river. It now occupies a grave beside that of the "Hermit of Niagara" in Oakwood Cemetery.

CARLISLE D. GRAHAM'S WONDERFUL TRIPS.

If any man deserves the title of "Hero of the Whirlpool Rapids" it is Carlisle D. Graham, a Philadelphia cooper, who, despite Webb's death, travelled to Niagara determined to show the world that he had confidence that he could go through the rapids and live, as well as being willing to risk his life in a barrel of his own construction. Graham made his first trip on the afternoon of Sunday, July 11, 1886, going way to Lewiston, the trip occupying about thirty-five minutes. Graham rode in a barrel weighted at the bottom. The height of the barrel was so that he could nearly stand upright in it, and the top was of larger diameter than the bottom. On Thursday, August

19, 1886, Graham made a second trip, going as far as the Whirlpool. In this trip his head protruded through the top of the barrel throughout the entire trip. He made a third trip June 15, 1887, and on August 25, 1889, he made a fourth trip, using a barrel of much smaller size and going way through to Lewiston. Graham will be remembered as never having disappointed a gathering. His nerve never failed him.

HAZLETT AND POTTS.

Copying somewhat the idea that Graham had developed so successfully, George Hazlett and William Potts, of Buffalo, made a trip through the rapids in a barrel, said to be of their own construction, on Sunday, August 8, 1886. The barrel they used more closely resembled the familiar type of barrel, having no unusual features of form.

W. J. KENDALL.

Two weeks after Hazlett and Potts had made the trip there appeared at Niagara a Boston policeman named W. J. Kendall. The date was August 22, 1886. Unannounced,

Kendall went through the rapids to the Whirlpool, protected by only a cork life-preserver. All previous trips had been publicly announced, but Kendall slipped through with only a few spectators, accidentally on the cliffs or bridges, to bear witness. For this reason some have felt that the trip was never made, but men of integrity are known who witnessed the performance.

GEORGE HAZLETT AND SADIE ALLEN.

In the same barrel that was used by Hazlett and Potts, Miss Sadie Allen and George Hazlett made a trip through the rapids on November 28, 1886. Miss Allen is the only woman who has ever made this journey through the Niagara gorge, and this trip, it may be remarked, ended the barrel voyages.

CHARLES ALEXANDER PERCY.

Next to appear on the scene to win fame through the rapids voyage was Charles Alexander Percy, of Niagara Falls. Percy had watched the others journey through the wild waters, and, being a wagonmaker, he conceived the idea of building a boat which possi-

bly might have value as a life-boat. The craft he built was seventeen feet long, four feet ten inches beam, with air chambers at either end. In this boat Percy made a fine trip through the rapids to the Whirlpool on Sunday, August 28, 1887. During the passage of the rapids he occupied one of the air chambers. The boat remained at anchor on the Canadian side of the Whirlpool for a month following Percy's trip through the rapids, and on Sunday, September 25, 1887, Percy and a friend, William Dittrick, made the trip through the lower half of the gorge from the Whirlpool to Lewiston, having a thrilling experience. In this trip Dittrick occupied one of the air compartments, while Percy sat in the cockpit.

On September 16, 1888, Percy made a second trip through the waters of the gorge to Lewiston. In this trip he narrowly escaped death, his boat being lost.

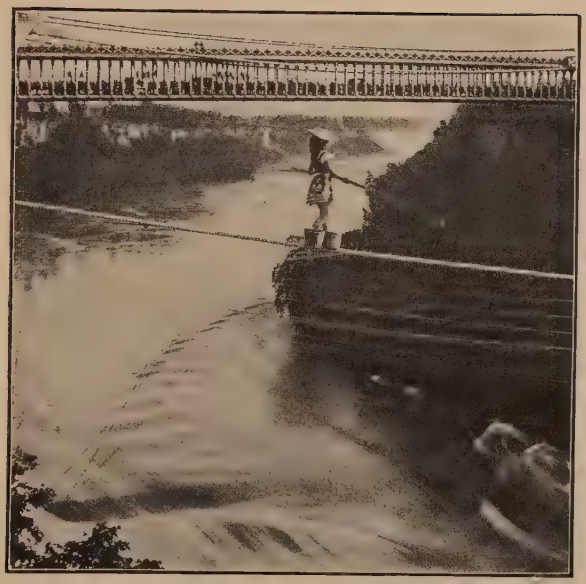
ROBERT WILLIAM FLACK.

The success Percy had in navigating the waters of the gorge in his boat led Robert William Flack, of Syracuse, to travel to Niagara to demonstrate the merits of a boat he had

built. Percy and Flack signed articles of agreement for a race through the rapids, but Flack was first to show that his craft was seaworthy. On the afternoon of July 4, 1888, Flack made this trip, and he went down to death. Flack's boat was of clinker pattern. In the trip through the rapids it capsized three times, but Flack remained in the boat because he was held there by a harness rigging about his body. It was a frightful spectacle, this trip of Flack's, and was witnessed by thousands of people. The last time the boat capsized was on the final big wave at the entrance to the Whirlpool. High in the air the boat tossed. It stood on end for an instant, and then it toppled over on poor Flack. From the point where the boat capsized it floated about the pool upside down for an hour or more until captured on the Canadian side. Flack was found hanging dead by the straps he had placed there to aid him to save his life.

WALTER G. CAMPBELL.

This would-be hero selected Sunday, September 15, 1889, for making the trip through the rapids. With a life-preserver about his



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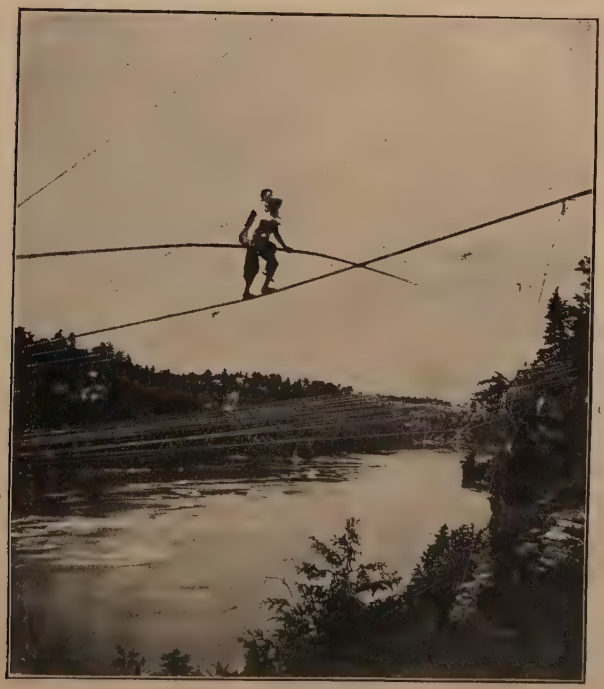


BLONDIN.

(From photographs taken at the time.)

body he rode in an open boat until it capsized, when he was thrown out and forced to battle with the waves. He landed in the Whirlpool twenty minutes after he started. A dog he carried with him in the boat was lost.

JOHN LINCOLN SOULES.

On July 4, 1890, John Lincoln Soules made an attempt to swim through the rapids, but in starting he kept too close to the Canadian bank and was thrown ashore at the elevator just below the bridges on the Canadian side, badly cutting one of his knees on a rock in landing.

PETER NISSEN'S FEAT.

For ten years there was a rest from the rapids agitation, and nothing notable occurred in those waters until July 9, 1900, when Peter Nissen, also known as "Bowser," appeared at the Falls and announced his intention of going through the rapids. Nissen is a bookkeeper, and the boat in which he made the trip was built after his own ideas. In length the boat was twenty feet. It had a beam of six feet and a depth of four feet. It was decked over, with

the exception of a small cockpit in the centre. There were two air compartments in the front and rear, and one on each side of the cockpit. To the keel of the boat proper hung an iron keel weighing 1,250 pounds. It was after four o'clock when Nissen and his boat came out of an eddy in tow of a rowboat. After being set adrift, he got caught in an eddy just above the rapids and had to be started again. It was approaching five o'clock before he was in the rapids. His craft rode the waves magnificently. It was a glorious sight, quite in contrast with the spectacle presented by Flack and his light craft. Never once did Nissen's boat capsize, for all it was wave-washed frequently. After reaching the Whirlpool, Nissen and his boat floated about until captured, when Nissen landed. The following day his boat was sent out of the pool to float to Lewiston, where it was taken from the water. Nissen's feat was indeed a grand sight. His home is in Chicago.

M. BLONDIN.

Of all the men who have won fame at Niagara none was more lasting than that of Blondin, who, on Thursday, May 30, 1859, first

crossed the Niagara gorge on a tight rope. His cable was stretched over the river at a point now midway between the upper and lower bridges. He made frequent trips thereafter, and on August 14, 1859, he carried Harry M. Colcord across the cable on his back. Blondin also crossed the gorge in 1860, in which year his cable was stretched over the Whirlpool Rapids below the old railway suspension bridge, since replaced by a steel arch. He walked with baskets on his feet, performed on stilts, cooked his meals on the rope. On September 8, 1860, Blondin walked for the Prince of Wales, now King of England, and on this occasion he also carried Colcord on his back.

SIGNOR FARINI.

While Blondin was commanding much attention by his performances in 1860, Signor Farini appeared at the Falls and stretched a cable across the gorge near the hydraulic canal basin. He was very expert on the rope and commanded much attention, but Blondin's fame has lived, while Farini has been forgotten.

SIGNOR BALLENI.

In 1873 Signor Balleni stretched a cable from a point opposite the old Clifton House to Prospect Park. One of his feats was to leap into the river, aided in his descent by a rubber cord.

MARIA SPELTERINA.

It was in July, 1876, that Maria Spelterina crossed the gorge on a tight rope. She is the only woman who has ventured this feat, and in all her performances she was watched by great crowds. Her rope was stretched over the rapids where Blondin last walked. She won great favor.

JENKINS AND HIS VELOCIPEDE.

Still another who performed on a tight rope at the Falls was a man named Jenkins, who stretched his cable across the gorge over the rapids. One of his principal feats was to cross from cliff to cliff on a machine that resembled a velocipede, his balance pole being held by an arrangement under his feet.

STEVE PEERE.

On June 22, 1887, Steve Peere, a painter, walked across the gorge on a wire cable six-eighths of an inch in diameter, stretched between the old suspension bridge and the cantilever bridge. His was indeed a wonderful performance, considering all the others had used a rope two inches in diameter. On June 25, 1887, Peere was found dead on the bank beneath his rope, the supposition being that he had attempted to walk it at night.

SAMUEL JOHN DIXON.

While Samuel John Dixon, a Toronto, Ont., photographer, was on his way to the photographers' annual convention, he observed Peere's cable still stretched across the Niagara gorge. He remarked that he could cross on it, and true to his word he returned to the Falls and made a trip over the slender cable on Saturday, September 6, 1890. He performed several gymnastic feats in the centre, and won much applause.

CLIFFORD M. CALVERLEY.

Clifford M. Calverley, of Toronto, erected a wire cable at the same point between the bridges where Peere and Dixon had crossed, and on Wednesday, October 12, 1892, he gave his first public exhibition at Niagara. He was indeed clever, and won for himself the title of the "American Blondin." On Saturday, July 1, 1893, Calverley opened another series of exhibitions at the Falls, performing numerous feats, such as high kicking, walking with baskets on his feet, cooking meals on the rope, and chair balancing. He also gave night exhibitions.

AVERY ON THE LOG.

Of all the incidents connected with Niagara none is more thrilling than the efforts made to rescue Avery from a log in the rapids, a short distance above the American Fall, on July 19, 1853. The night before, Avery and a companion had been swept down the river in a boat. Avery landed on a log, but his companion was carried over the Fall. All day long mighty efforts were made to save Avery. Boats, rafts, and barrels were let down to him from the

Goat Island bridge, and towards evening, just when a rescue appeared certain, the very boat that was designed to carry him to safety struck him full in the breast and knocked him into the river, and he was hurled over the Fall. to the horror of the assembled thousands.

A SAD INCIDENT.

To pretty Luna Island must be accredited what is perhaps the most sorrowful incident in the history of Niagara. On June 21, 1849, while the family of Mr. Deforest, of Buffalo, in company with a friend, Charles Addington, were viewing the American Fall from this island, Mr. Addington playfully picked up Annette Deforest and held her over the rapid rushing water. The child, in the excitement, sprang out of Mr. Addington's arms into the water. In a second she was dashed over the precipice. As she struck the water Mr. Addington leaped after her, and he also was swept to death over the precipice.

UNCONQUERED NIAGARA.

Despite all that has been claimed by certain fakirs, let it be known that up to the opening

of the twentieth century no human being has ever gone over the Falls of Niagara and lived to tell the story of the experience.

DUMMY MAID OF THE MIST.

In September, 1883, several enterprising citizens of Niagara Falls purchased a small boat, which they fitted up to represent the Maid of the Mist, and sent it through the rapids. Men were stationed about the boat in effigy, but no human beings were allowed aboard during the trip, for all there were applications for passage. The boat passed through the gorge in good shape.

NEW YORK STATE RESERVATION.

On the 15th day of July, 1885, the lands in the immediate vicinity of the Falls were thrown open free to all mankind forever, New York State having acquired the property from the individual owners on payment of $1,433,429.50.

VICTORIA PARK.

On the 24th of May, 1888, the sixty-ninth anniversary of Her Most Gracious Majesty, the late Queen Victoria, the lands on the Cana-

dian side were opened free to the public. On June 21, 1888, the event was celebrated.

DEATH ON THE ICE MOUNTAIN.

On February 28, 1886, while L. G. De Witt, of New York, was viewing the winter scenery, he slipped from the ice mound towards the American Fall. On March 11, following, his body was seen on the ice at the foot of the Fall. On March 12th dynamite was used to blast the ice in order that the body might be recovered. March 13th a tunnel through the great ice mountain was begun, and after three days of hard work the body was secured.

RESCUED FROM A ROCK.

While engaged in painting the bridge that leads to the Second Sister Island, in 1874, William McCullough fell into the river. In his passage down stream he caught on a rock, from which he was rescued by Thomas Conroy, then a well-known guide.

RESCUE OF CHAPIN.

In 1838, while one of the bridges leading from the mainland to Goat Island was being

repaired, a Mr. Chapin fell from the work into the water. He was fortunate enough to land on one of the small islands, from which point he was rescued by Joel Robinson by means of a small boat. The island is known as Chapin Island.

TAYLOR ISLAND DOGS.

Before the construction of the Gorge Road, a fall of rock on the New York side of the Whirlpool Rapids was known as Taylor's Island. Two dogs that had been thrown off the lower bridge landed here. They attracted much attention. Food was thrown to them daily. On August 11, 1881, James F. Brown descended the cliff and rescued them.

TRIP OF THE DETROIT.

In 1841 the Detroit, a vessel of about 500 tons burden, was started down the river, the intention being to send her over the Falls. She lodged on a reef, and afterwards went to pieces. The Detroit is said to have been one of Commodore Perry's fleet.

BIDDLE STAIRS.

The Biddle Stairs are on Goat Island and lead to the Cave of the Winds. They are named after Nicholas Biddle, of Philadelphia, who gave a sum of money towards their construction in 1829. There is a desire to replace them with an elevator.

OLD TERRAPIN TOWER.

This structure was erected at Terrapin Point, on the edge of the Horseshoe Fall, in 1833, the stone being gathered in the vicinity. It was 45 feet high, 12 feet in diameter at the base, and 8 feet at the top. It was believed to be unsafe, and was torn down in 1873. There is talk of rebuilding it.

SUSPENSION BRIDGE DESTROYED.

On the night of January 9-10, 1889, a terrific gale swept down the Niagara gorge from the southwest. It caught the upper suspension bridge full on the side. Stays gave way, and soon the great structure was swinging at the mercy of the gale. About 3 A.M. it fell into the gorge, a complete wreck. Dr. John

Hodge was the last man to cross it before it fell.

WRECK OF LEWISTON BRIDGE.

There was a vast amount of ice passing down the Niagara River in the winter of 1863-1864, and the men in charge of the old Lewiston suspension bridge unfastened the guys, thinking the ice might carry them away. After the ice-floe had passed they forgot to refasten them, and a high wind wrecked the bridge on February 1, 1864. It was not rebuilt until 1899.

THRILLING RESCUES.

John McCloy is the owner of a medal for several daring rescues at Niagara. On October 6, 1886, he rescued Charles Robinson from the remnant of a pier in the rapids above Bath (now Green) Island. This feat was performed at night by the light of bonfires. On November 15, 1887, he rescued William Glassbrook from the rocks at the foot of the Horseshoe Fall. Glassbrook was out duck hunting and had lost his boat. "Thank God! I'm saved at last," were the first words Louis Hoehn uttered after McCloy had rescued him from a

ledge of rock in the river, a third of the distance between Goat and Bird Islands, on Monday, May 9, 1898.

GOAT ISLAND.

This beautiful spot is so named because John Stedman placed thereon a number of animals, among them a male goat. This was about 130 years ago. It was the intention to have the animals winter there, but when spring came none but the goat was found alive, and to this incident is attributed the naming of the island.

SEARCHLIGHT ILLUMINATION.

One of the new features at Niagara during the summer months is the nightly illumination of the Whirlpool Rapids by searchlight operated on the Niagara Gorge Railroad. The spectacle is unusual and brilliant. At times the illumination is effected by means of powerful arc lamps at the old Buttery elevator, and at other periods of the display both the shore lights and the searchlight are in operation. A divergent door placed before the searchlight serves to cast the beam from bank to bank, while color discs give various hues to the light

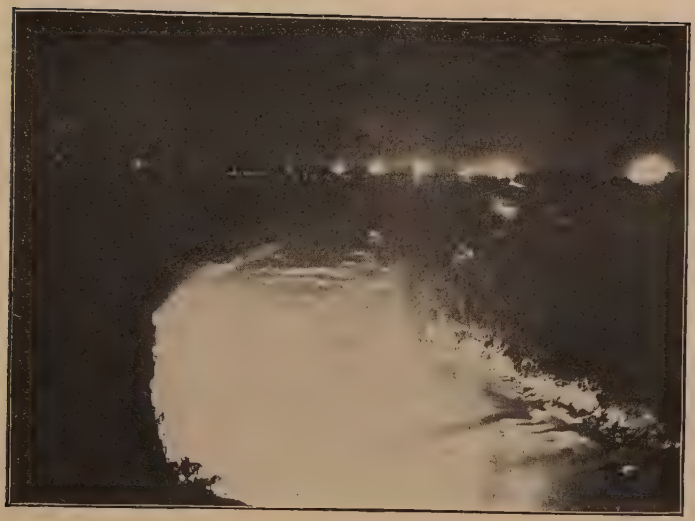
and the water. At times red fire is burned in quantities, and the cliffs and the wild waters are aflame. Under this light the Whirlpool Rapids become a raging torrent of crimson.

EARLY CROSSING OF THE GORGE.

When the railway suspension bridge, recently supplanted by an arch, was projected, connection was made between the cliffs by a kite string. This served to draw a heavier cord, and later wire cables, over the river, and on the cables so placed an iron basket was operated from cliff to cliff. Although it was designed to aid in the construction of the bridge, thousands of passengers were carried. This basket is now in possession of the Buffalo Historical Society.

OLD FERRYBOAT SERVICE.

From the foot of what is now the inclined railway in Prospect Park, a ferryboat service was for many years operated between the banks. The boats were small but staunch, and manned by strong oarsmen. Until 1868 there was no bridge crossing the river close to the



Copyright, 1900, by Orrin E. Dunlap.

SEARCHLIGHT IN THE GORGE.

Falls, and the ferryboats were largely patronized. The trip was full of interest, for from the ferryboats views of the Falls were obtainable from midstream. The steamer Maid of the Mist has now taken the place of the smaller craft.

A THRILLING EXPERIENCE.

On Sunday afternoon, January 22, 1899, while about fifty people were crossing on the ice bridge, the ice commenced to move down stream on the current. Immediately there was a wild rush for the shores. One young man saved himself by leaping from the ice onto the steel arch near the American shore, but a man and woman, who gave the names of C. E. Misner and Miss Bessie Hall, were carried several hundred feet down stream before they reached the bank of the river.

ICE PALACE.

In 1898 several residents of Niagara Falls erected an ice palace on the Riverway opposite Prospect Park. The weather was very unfavorable for the venture, and it proved a financial failure.

CROSSING THE ICE BRIDGE ON HORSEBACK.

On Thursday and Friday, January 23 and 24, 1879, Andrew Wallace, a resident of Canada, rode a horse across the ice bridge and up the ice mountain. Robert Owen, of Niagara Falls, has also performed this feat.

WATER BICYCLE TRIP.

On Sunday, August 14, 1887, Prof. Alphonse King crossed the river below the Falls and bridge on a water bicycle. The wheel with paddles was erected between two watertight cylinders, 8 inches in diameter and 10 feet long.

ROMANTIC MARRIAGES.

Tuesday, July 28, 1891, in the evening, just as the sun was sinking in the west, Judge Edward E. Russell married Henry Bird and Miss Carrie Scudder, of Newark, N. J., on the upper suspension bridge. On another occasion Judge Russell married a romantic couple at the entrance to the Cave of the Winds, right in the spray cloud.

RESCUE OF MRS. GRIMASON.

While crossing the old upper suspension bridge on Saturday, September 24, 1892, Mrs. Grimason, of Toronto, Ont., fell through a hole. She caught on the bottom chord, from which perilous position she was rescued by Harry Williams, Harry Huntley, and Rev. Dr. Ramsay. Williams received a medal from the Royal Canadian Humane Society.

AUTOMOBILE ACROSS ICE BRIDGE.

Wednesday, February 27, 1901, an automobile was taken down the bank on the Canadian side and dragged across the ice bridge. It was pulled up the slope leading to the ice mountain, where photographs were taken for advertising purposes.

SLID DOWN A ROPE.

Monday, August 15, 1887, Prof. J. E. DeLeon, who aspired to be Peere's successor, started out to cross his cable. After going a short distance he slid down a rope and disappeared in the bushes, ascending the bank by a ladder.

THE CRANDALL CASE.

Niagara records do not contain a more remarkable incident than that concerning Bryant B. Crandall, a Buffalo man who left his home on the last day of May, 1886, and on the following day wrote letters intimating an intention to commit suicide. April 3d a hat bearing his name was found on the river bank. July 28th a body found near Queenston was identified as that of Crandall and interred in the family plot, Buffalo. His insurance policies were paid. In 1887 suspicion was excited by William B. Sirrett, of Buffalo, claiming to have seen Crandall in Los Angeles, Cal. Clew after clew was followed. A reward of $1,000 was offered. In 1892 Crandall was captured in California.

THE "AMERICAN BLONDIN."

Harry Leslie was first to be given the title of "American Blondin." He crossed the gorge and rapids on a rope cable in July and August, 1865.

DORING'S BAND IN CAVE OF THE WINDS.

On the afternoon of Saturday, August 26, 1865, Doring's Band, of Troy, N. Y., then filling a summer engagement at one of the hotels, passed through the Cave of the Winds, carrying their instruments. The band had ten members. They played "Yankee Doodle" on Prospect Rock in front of the cave.

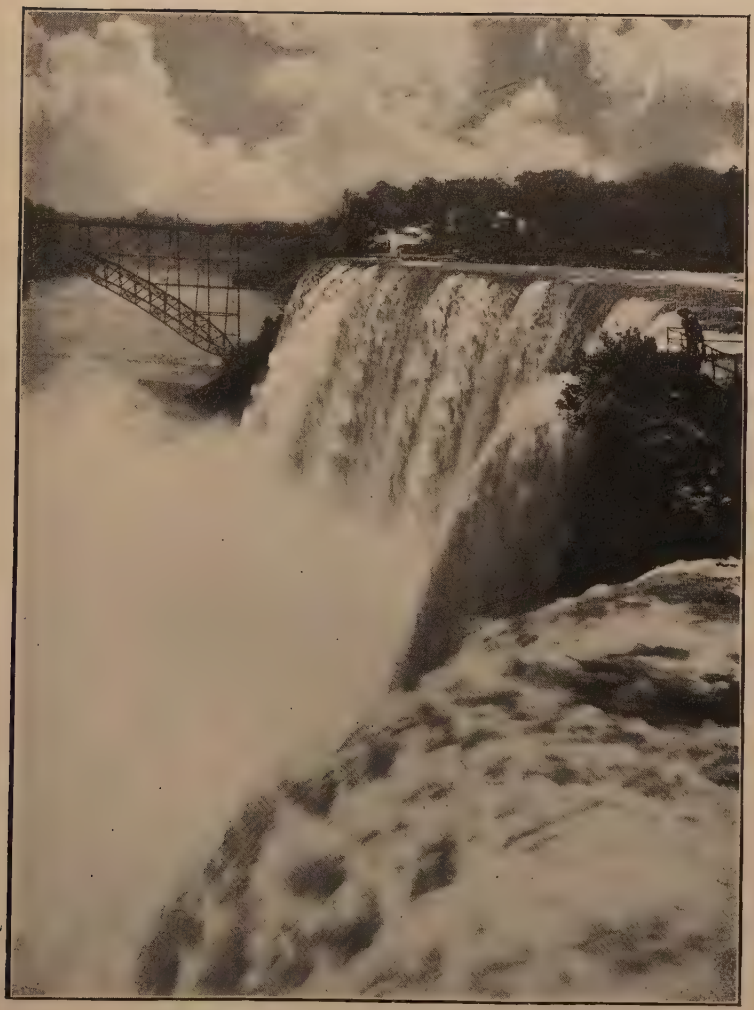
FARINI IN THE RAPIDS.

Monday, August 8, 1864, Farini walked about the rapids above the American Fall on stilts. Between Robinson's Island and the precipice he was delayed. He claimed his stilts caught in a crevice. His brother succeeded in reaching a log between the old paper mill and Robinson's Island, from whence he threw a line, with a weight attached, to the adventurer, and by this line a pail of provisions was sent to Farini. A larger line was thrown and both reached shore by way of Goat Island.

HISTORIC NIAGARA.

By Peter A. Porter.

Famous all over the world as Niagara is to-day in its scenic, botanic, geologic, and hydraulic aspects, it is equally famous, equally interesting, and equally instructive in its various and numerous historic features. And in using the words of our title we use them in their broadest and noblest sense, employing the word "historic" to cover all those multitudinous phases of this region's existence and condition at which a true student of history instinctively looks; and the word Niagara, not in that circumscribed meaning which takes in only the Falls and their immediate surroundings, but making it cover both banks of this famous river from its source to its mouth. To treat of such a broad subject within the narrow limits of a few pages will permit of only the briefest reference to any point.



Photograph by Nielson.

THE AMERICAN FALL FROM GOAT ISLAND.

EARLY MENTIONS OF NIAGARA.

Just when white men first saw the Falls we cannot accurately say. This great Cataract was known in a general way to the Indians of North America, who dwelt far from it and who had never seen it, probably before Columbus sailed on his first voyage of discovery. It has been known to white men, only since 1603, although the Falls may possibly, though not probably, have been visited during the 16th century by any one of the adventurous seamen and traders sent out by France to explore the New World, though they left no record of any such visitations. Samuel De Champlain in his "Des Sauvages," published in 1603 and describing his first voyage to the St. Lawrence, in that year, refers to the Falls in unmistakable language though not by name, this being the first reference to them in literature. The Indians told him in reply to his inquiries regarding the source of the St. Lawrence, that "after ascending many leagues among rapids and waterfalls he would reach a lake (Ontario), 140 or 150 leagues broad, at the western end of which the waters were whole-

some and the winters mild; that a river emptied into it from the south which had its source in the country of the Iroquois; that beyond the lake he would find a cataract and a portage; then another lake (Erie) about equal to the former, which they had never explored." Champlain never saw Niagara. In his 1613 volume, describing his voyages up to that date, he locates them very accurately on his maps as a "waterfall," but not by name; and in his 1632 edition, he both locates them correctly, though not by their name, on his map and further refers to them in his description of the map itself. In 1641, the Jesuit Father L'Allement in his letters to his superior, speaking of the Indian tribes, refers to the "Neuter nation (Onguiaarha), having the same name as the river;" and in 1648 the Jesuit Father Ragueneau in a similar letter says, "North of the Eriës is a great lake fully 200 leagues in circumference called Erie, formed by the discharge of the *Mer Douce* (Lake Huron), which falls into a third lake called Ontario, though we call it Lake St. Louis, over a cataract of fearful height." In 1656 Sanson located the Falls accurately on his map and called them

"Ongiara," and in 1660 De Creuxius in his "Historiae Canadensis" noted them as "Ongiara Catarractes." In 1678, Father Louis Hennepin, who accompanied La Salle, tells us that "he personally" visited the Falls, and in

FAC-SIMILE OF A VIEW OF NIAGARA FALLS BY FATHER HENNEPIN.

(From the Original Utrecht Edition, 1697.)

his first book, "Louisiana," published in 1683, describing La Salle's explorations and adventures in this section of the country, applies the name Niagara both to the river and to the Falls, and gives the earliest, though a very

brief description of the Falls themselves. In 1688, Coronellis's map of this region locates the Falls and first uses the name "Niagara" in cartography, a name used from that date without change. In 1691, Father Le Clercq in his "Establishment of the Faith" (from which work Father Hennepin is accused of plagiarizing certain parts of his famous "New Discovery"), also speaks of "Niagara Falls," but it is in Father Hennepin's "New Discovery" just referred to, published in 1697, that we find the first real description of them preserved to us in type, and in that volume is also given the first illustration of the Falls, which is reproduced in this work. A part of Hennepin's description is also quoted in another article in this book.

During the next fifty years Hennepin's three works appeared in some forty-five editions and reproductions, and were translated into all the languages of Europe; and by these means and from descriptions of other travellers (notably that of Campanius Holm, in his "New Sweden," published in 1702, and Baron La Hontan's "Voyages," published in 1703) Niagara became generally known to Europeans.

It was reserved for Charlevoix, in 1721, accurately to reckon the height of the Falls and to correct other erroneous reports and descriptions of them published theretofore. We have thus briefly traced the history of the earliest knowledge and of the earliest literature of Niagara down to a comparatively recent date. From that time the bibliography of Niagara, including its cartography and illustrations of every kind, is so voluminous as to form in itself a distinct branch of our title on which for lack of space we cannot even touch.

THE NAME NIAGARA.

The Indian custom of giving their tribal name to, or taking it from, the chief natural feature of the country they inhabited (as proved by the nomenclature of the Central and Eastern States, as well as in the extensive literature on Indian subjects) tells us that a nation of this name inhabited the territory along the Niagara River on both sides; but as there are forty different known ways of spelling the name, its orthography differs materially with various early authors.* This much,

* A list of these is given in the Index volume of the "Docu-

however, we know—that when Hennepin first saw the Falls, *Niagara* was the local Indian spelling of the name; "Niagara," the world accepted it; and "Niagara" it has been ever since. According to the most general acceptance the name is derived from what is commonly known as the Iroquois language, and signifies "the thunder of the waters," though this appropriate and poetic significance has been questioned, and it is claimed by some that it signifies "neck," symbolizing the fact of the Niagara River being the connecting link between the two great lakes.

The Neuter or Niagara nation of Indians (subsequently merged into the Iroquois) by whom the name was first adopted, would seem to have pronounced it Nyáh-ga-ráh, their language having no labial sounds, and all their words being spoken without closing the lips. The pronunciation Neé-ah-gara, sometimes heard nowadays, was probably also in common use later on; while in more modern Indian dialect, the sounding of every vowel being still

mentary History of the State of New York." The most commonly met with of these variations are Onguaiarha, Ongiara, Onyakara, Iagara, Nicariaga, Ungiara, and Jagara.

continued, Ni-ah-gȧh-rah (accent on the third syllable) was the accepted, as it is the correct, pronunciation, the present pronunciation, without any pronounced accent on any syllable, being an adaptation of more recent years.

MODERN HISTORY.

The commencement of what may be termed the modern history of this region dates back to that day in December, 1678, when, starting from the mouth of the Niagara River,

> "A chieftain of the Iroquois, clad in a bison skin,
> Had let two travelers through the woods—
> La Salle and Hennepin"—

to view the great cataract of which they had heard so much from their Indian allies on the St. Lawrence. As these three men stood there, they typified the nations—the French and the Indian—that for almost a hundred years were to control the destinies of this region; and in their personalities, "the chief, the soldier of the sword and the soldier of the cross," they exemplified the professions by means of which its conquest and civilization were to be effected.

In the two hundred years that have elapsed

since that day, the Indian and the Frenchman have disappeared from this region; another and a stronger race has acquired possession of this territory, to be in turn dispossessed of half of it by her own descendants. And during those two hundred years, on the pages of their history and in the literature of France, England, Canada, and the United States, the name *Niagara* is indelibly stamped as a prominent and integral part.

OWNERSHIP.

So far as the contention for, and the possession of, this famous region by the nations of the earth are concerned, we may divide its history into these main periods:

French claims on a broad basis by reason of early explorations and discoveries in the East, up to the real occupation by La Salle in 1678.

French occupation and sovereignty from that date, gradually, but regularly, and at last successfully disputed by the English in 1759.

English occupation and undisputed control from then till 1776.

English occupation till 1783, and from that

date undisputed ownership of the land lying west of the Niagara River.

United States ownership and control of that part lying east of the Niagara River from that date, although so far as Fort Niagara is concerned, England did not relinquish it till 1796.

FRENCH OCCUPATION.

The French, having early claimed all the northeastern part of this continent from Labrador southwards as above noted, began at an early date to push their explorations and conquests westwards at first mainly along the line of the St. Lawrence River. Champlain, between 1603 and 1630, had done much to make France a paramount force in this section and to attach many of the Indians to her allegiance by siding with them in their tribal wars against their neighbors—an alliance which in after years arrayed many Indian tribes, especially the powerful Iroquois, against her and hastened her defeat.

On December 6, 1678, Father Hennepin, in a brig of ten tons and with a crew of sixteen persons, entered the mouth of the Niagara River. He was on his westward journey, sent

on in advance by La Salle, who followed him before the close of the year, and who, through love of his country and expectations of personal wealth, had labored long to extend the sovereignty of France. La Salle's object was to make good by conquest the powers conferred upon him by the French king, to obtain for himself a monopoly of the fur trade, and to reach and control the mines of St. Barbe, in Louisiana; and as he went he intended to establish a chain of fortifications which both in war and the fur trade should be points of vantage for future generations.

A true soldier, La Salle at once saw the immense strategic advantage of the point where Fort Niagara now stands, and to this day the correctness of his judgment has not been questioned. Here he built a trading post, and pursuing his way up the Niagara River to where Lewiston now stands, he built a fort of palisades; and carrying the anchors, cordage, etc., which he had brought for that purpose, up the so-called "Three Mountains" at Lewiston, he found a spot at the mouth of Cayuga Creek, about five miles above the Falls (where is to-day a hamlet bearing his name),

where he built and launched the Griffon, the first vessel that ever sailed the upper lakes. For almost a hundred years after this the history of the Niagara Frontier belongs to the French, though their sovereignty was attacked and at last overthrown by the English.

In 1687, Marquis De Nonville, during his expedition against the hostile Senecas, rebuilt La Salle's destroyed trading post at Fort Niagara into a strong fort. The following year it was abandoned and destroyed, but it was too valuable a point of vantage to be lost, and in 1725 it was rebuilt in stone by consent of the Iroquois.

The site of the present village of Lewiston, the head of navigation on the lower Niagara, was the commencement of a portage by which goods, ammunition, etc., were conveyed to a point about a mile and a half above the Falls, over a line which is still called the Portage Road. For the purposes of this portage, from the edge of the river at the lower end of the rapids, up the "Three Mountains," was built a rude tramway on which, by means of ropes and windlasses, a car was raised and lowered. Built in 1764, it is claimed to have been

the first railroad constructed in this country. Though noted on many maps no trace even of its foundations now remains. The Indians, naturally averse to manual labor, operated the tramway, taking their pay in rum and tobacco, otherwise unobtainable by them. The upper end of this portage was originally only a landing place for boats, but was gradually fortified until in 1750 it became a strong fort—called Fort Du Portage, or by some, Fort Little Niagara—to defend the French barracks and storehouses which had been erected there. The Fort was burned in 1759 by Joncaire, who was in command when the British commenced their memorable campaign of that year, and Joncaire retreated to a station on Chippewa Creek. In that campaign General Prideaux, commanding the British forces in this section, and carrying out that portion of the general plan assigned to him, massed his forces on the shore of Lake Ontario, east of Fort Niagara, and demanded its surrender; this being refused, he laid siege to it. During the siege Prideaux was killed, and Sir William Johnson succeeded him and captured Fort Niagara, the main stronghold then held by the French in

that long chain of forts connecting Canada with Louisiana. During the siege the French had sent reinforcements from Venango in Pennsylvania to the garrison of Niagara. They left their vessels on Navy Island (named Isle de Marine by the French), passed over the Portage, and just before reaching Fort Niagara were ambushed and routed by the British. On Navy Island the French had recently built some small vessels, and to prevent these, as well as the two ships which brought down the reinforcements from Venango, from falling into the hands of the victorious British, they took them over to Grand Island, at the northern end of which is a bay, where they set them on fire, destroying them and sinking the useless hulls, from which circumstance the place is called Burnt Ship Bay to this day.

The British successes of 1759 made them masters of all this frontier, and by 1761 Capt. Joseph Schlosser of the British Army built a fort a little to the east of Fort Du Portage and named it after himself. Just below the site of that fort still stands a solitary stone chimney, the only relic left of all these fortifications. It

was part of the old French barracks, previously alluded to at Fort Du Portage.

DEVIL'S HOLE MASSACRE.

The Indian nature is heartless and unforgiving. When Champlain in his trip to the lake which bears his name asked the assistance of the Hurons, he took their part in their tribal war against the Iroquois. Thus was laid the commencement of that partisanship of the various Indian tribes, some to the French and some to the English, which lasted throughout the better part of the eighteenth century, and one of the results of which was that fatal tragedy on this frontier known as "The Devil's Hole Massacre."

After the British success of 1759 and their subsequent control of this territory, the Senecas, actuated by their inherited hatred of the English and incited probably by the French, commenced a bloody supplemental campaign in 1763. Knowing that the English were daily sending poorly guarded trains from Fort Niagara through Lewiston, where they had an auxiliary encampment, to Fort Schlosser, they planned an ambuscade and executed it

Photograph by Koonz.

DEVIL'S HOLE.

with precision and fatal results. At the narrow pass at the Devil's Hole they ambushed the supply train, destroying it and killing all but three of the escort and drivers. They then ambushed the relieving force, which on hearing the firing had hastened from Lewiston, killing all but eight. It was a masterly example of Indian warfare executed with Indian cunning and Indian bloodthirstiness.

CESSIONS AND TREATIES.

By the treaty of 1763 France ceded to England all this region and all her Canadian possessions for which her armies and her missionaries had spent, during one hundred years, so much energy, so vast an amount of money, and so many lives.

In the spring of 1764 Sir William Johnson, supplementing the treaty of the preceding year, assembled representatives of all the Indians of Northern America from both East and West, over 2,000 in number, including the hostile Senecas, at Fort Niagara, and acquired from them, for the British Crown, the title to a large tract of land, including a strip four miles in width, two miles wide on each side of the

Niagara River for its entire length. At the same time the Senecas ceded to Sir William Johnson all the islands in the Niagara River. He in turn ceded them to the British Sovereign. So that at this time Niagara Falls, the grandest and most noted cataract on the globe, was the *Koh-i-noor* of the English Crown in the New World. Twelve years afterwards the Declaration of Independence was signed and the long revolutionary struggle for independence commenced. Had General Sullivan's campaign of 1779, as planned, been successful, he would have attacked Fort Niagara; but disaster overtook him, and the War of the Revolution never reached the Niagara River in actual hostilities. In 1783 the Treaty of Paris was signed, by which England admitted the independence of the United States and recognized the Great Lakes as our northern boundary, though it was not until 1796, after the ratification of Jay's treaty, that she abandoned some of the strongholds on our soil, including Fort Niagara.

WAR OF 1812.

It is foreign to the purpose of this article to discuss the causes, some of which had a bear-

ing on this region, which led up to President Madison's proclamation of war between Great Britain and the United States, known as the War of 1812, of which this immediate region, popularly called the Niagara frontier, felt the full force. In the fall of that year, four months after the declaration of war, General Van Rensselaer established his camp near Lewiston (so called in honor of Governor Lewis of New York), and collected an army to invade Canada. After one unsuccessful attempt he reached the Canadian shore, and by the time General Brock had arrived from the mouth of the river to oppose him, was in possession of Queenston Heights. In endeavoring to recapture these and to retrieve the point of vantage that never should have been lost, General Brock was killed. British reinforcements arriving from Niagara, the Americans were dislodged from the heights, defeated, and many taken prisoners. Meanwhile, on the American side, in full view of the battle, were some hundreds of American volunteers who basely refused to cross the river and aid their companions. At the foot of Queenston Heights an inscribed stone (set in place by the Prince of

Wales in 1860) marks the exact spot where Brock fell; and on the heights, just above it, a lofty and beautiful column (the second one erected at this point, the first one having been blown up by a miscreant in 1840) stands as a monument of his country's gratitude. In the same year Gen. Alexander Smyth, of Virginia, issued his famous bombastic circular inviting everybody to join him at Black Rock, near Buffalo, and invade Canada from that point. Some five thousand men responded to his invitation, but Smyth having made himself a laughing-stock among his own people, the invasion was abandoned and the army dispersed.

In the following year, 1813, the Americans captured Fort George on the Canadian shore, near the mouth of the Niagara River, and the village of Newark, or Niagara. This is the oldest settlement in this section. It was for a time the residence of the Lieutenant-Governor of Canada, and here in 1792 the first Parliament of Upper Canada held its session. Newark was burned by the Americans on their retreat, without reason, as the British claimed, and they immediately retaliated; for ten days

later they surprised and captured Fort Niagara and burned every American village on the Niagara River, including Youngstown, Lewiston, Manchester (now Niagara Falls), Fort Schlosser, Black Rock, and Buffalo, spreading devastation along the American frontier. The year 1814 witnessed two battles in the vicinity of the Falls themselves, both on the Canadian side. Chippewa, a victory for the Americans, and Bridgewater or Lundy's Lane, claimed as a victory by both parties. The latter was one of the most remarkable conflicts recorded in history. Within sight of the Falls, in the glory of the light of a full moon, the opposing armies engaged in hand-to-hand conflict, from sundown to midnight, when both sides, exhausted by their efforts, withdrew from the field. The British before dawn, and unopposed, reoccupied the battle ground, and on this alone rests their claim to victory. Later on the American army occupied Fort Erie, which they had shortly before wrested from the British and where they were besieged by them. From this fort on the seventeenth of September, 1814, the Americans made that famous and successful sortie, planned and led by Gen.

Peter B. Porter, which disbanded the British besiegers, this being the only case in history, according to Lord Napier, where a besieging army was entirely defeated and disbanded by such a movement.

We necessarily omit all reference to many points along the river made famous by the exploits, the daring, and often by the loss of life of the combatants in this war—points locally important in themselves but which have not risen to the dignity of that much-abused word, "history."

The Treaty of Ghent restored peace to both countries and to the inhabitants on their exhausted frontiers. Under this treaty, commissioners were appointed to locate the boundary line between Canada and the United States, already somewhat laxly provided for in the treaty of 1783. These commissioners agreed to run the boundary line along this frontier, through the middle of the Horseshoe Falls and through the deepest channel of the river, both above and below them. Thus Navy Island fell to the share of the Canadians and Grand Island became American soil.

Photograph by Koonz.

A PANORAMA OF NIAGARA.

LAND TITLES.

We have already noted the cession of this region by the French to the English in 1763, and also the cession by the British of the eastern side of the river to the United States at the close of the Revolutionary War, which joint occupation has never since been permanently disturbed. We also noted the cession by the Senecas to the British of the land on each side of the river, and of the islands to Sir William Johnson and by him to the English Crown.

A strip of land one mile wide along the American shore from Lake Ontario to Lake Erie had been exempted when New York ceded the ownership of what is now the western portion of this State to Massachusetts, which ownership New York subsequently reacquired. Finally the Indians, who, in spite of their former cessions to England, still claimed an ownership, ceded to New York, for $1,000 and an annuity of $1,500, their title to all the islands in the Niagara River. The State of New York patented the mile strip to individuals commencing in the first decade of this century.

FAMOUS INCIDENTS.

In the year 1824 Grand Island, which contains about eighteen thousand acres, was selected by Major M. M. Noah as the future home of the Jews of the New World. He proposed to buy the island, make of it a second Jerusalem, and within the sound of Niagara to build up an ideal community of wealth and industry. In 1825, acting as the Great High Priest of the Project, clad in sacerdotal robes, attended in procession by the civic and military authorities, local societies, and a great concourse of people, with appropriate ceremonies he laid the corner-stone of his future City of Ararat on the altar of a Christian church in Buffalo. This corner-stone was subsequently built into a monument at Whitehaven on Grand Island, opposite the village of Tonawanda. It is now in the possession of the Buffalo Historical Society. Major Noah's plan fell through, as the Patriarch of Jerusalem refused his sanction to the project.

THE ERIE CANAL.

On October 26, 1825, a cannon boomed forth its greeting at Buffalo; a few seconds

afterward another cannon a short distance down the river caught up the sound, and so on, cannon after cannon, cannon after cannon, down the Niagara River to Tonawanda, thence easterly to Albany, thence down the bank of the Hudson to New York City, transmitting the message that at the source of the historic Niagara River the waters of Lake Erie had been let into that just completed water-way—the Erie Canal.

Fort Niagara became a spot of national celebrity in 1826. William Morgan, a resident of Batavia in this State, and a member of the Masonic fraternity, threatened to disclose the secrets of that body in print. He was quietly seized and taken away from his home. He was traced in the hands of his abductors to Fort Niagara, where he is said to have been incarcerated in one of the buildings in the fort, and to this day "Morgan's Dungeon" is one of the sights shown to visitors. He was never heard of after he entered the fort, and popular fancy says that he was taken from this dungeon by night and drowned in Lake Ontario. Several persons were subsequently tried for his murder, but no proof of their complicity in

the matter, nor even of Morgan's death, was produced. The principal episode in the famous anti-Masonic agitation of that period thus became a part of Niagara's local history.

THE PATRIOT WAR.

In 1837 occurred what is known as the Canadian Patriot War. While the agitation of the Patriots centred in Toronto, it kept the entire Niagara frontier on the Canadian side in a ferment for several months, and Navy Island became one of their rendezvous, a portion of the British troops being stationed at Chippewa. Without reference to the intrigues carried on along the frontier by the Canadian agitators with their American sympathizers, we deal only with the one important event known as the Caroline episode. It was openly charged that the Patriots were receiving substantial aid from the American side, not only from private individuals, but also by reason of the non-intervention of National and State authorities, when they knew that arms were being shipped and material assistance rendered from American soil. So bitter was the feeling on the part of the Britishers, that when the

opportunity offered, it is not surprising that they made the most of it. A small steamer, the Caroline, had been chartered by Buffalo parties to run between that city, Navy Island, where the insurgents were encamped, and Schlosser Landing on the American shore. According to their statement it was a private enterprise, started to make money by carrying excursionists to the insurgents' camp; but according to the Canadian view, her real business was to convey arms and provisions to the insurgents. On the night of December 29th, the Caroline lay at Schlosser's dock. The excitement had drawn large numbers of people there; all the hotels were filled, and some people had sought a night's lodging on the steamer itself. At midnight six boatloads of British soldiers, sent from Chippewa by Sir Allan McNab, silently approached the Caroline, boarded and captured her, turned off all on board, cut her moorings, set her on fire, and towed her into the river. In the mêlée and exchange of shots, one man, Amos Durfee, was killed. The boat was burned to the water's edge and sank not far from where she had been cut adrift.

The affair caused intense excitement and was the source of long diplomatic correspondence, the British Government assuming full responsibility for the claimed breaches of international law, but finally apologizing for it. One man, Alexander McLeod, was arrested and tried in this State for manslaughter, and finally acquitted.

THE FENIAN WAR.

From the time of the Patriot War, with the exception of the Fenian Outbreak in 1866, the history of this region has nothing to do with international war. The Fenian Outbreak, similar in its inception so far as its hostility to the existing government of Canada and a desire to aid the Irish cause of home rule by inciting hostilities among Britain's colonies, was quickly suppressed. Of actual hostilities during that agitation there was but one occurrence, known as the battle of Ridgeway, on the Canadian side in the vicinity of Buffalo, where the Fenians were defeated.

COMMERCIAL HISTORY.

In its commercially historic aspects, there stands out one important project in connec-

tion with Niagara Falls which has been broached by its advocates in public and in private, and especially in the halls of Congress for the past three-quarters of a century. Although by international treaty, no war vessels are permitted on the upper lakes, in the line of Washington's famous aphorism, that "the best way to maintain peace is to be prepared for war," the advocates of a ship canal of a capacity large enough to float our largest vessels, connecting the Niagara River some two or three miles above the Falls with its quiet waters at Lewiston or below, have continued their agitations, and preliminary appropriations, and elaborate surveys—showing three or four routes—have been made by Congress at three different times. The project so far has made but little headway towards a successful consideration. Of its earliest commercial history, during the first years of the century, when private individuals bought the land from the State on account of its adjacent water power, and established here a village which they named Manchester; of the first utilization of a portion of its enormous power in recent years and of the present stupendous

power development now nearing completion, we cannot treat for lack of space. The enormous development of power and its electrical transmission, with all that this has already added and will add to Niagara's history, are treated of elsewhere in this volume.

STATE RESERVATION AT NIAGARA.

In 1885, after some years of public agitation, the State of New York acquired Goat Island and the territory on the river bank adjacent to the Falls and for a half-mile above them, dedicating it by its ownership as free forever to the world. The Province of Ontario in 1888 took a similar course on the Canadian side, so that now the Falls themselves and the adjacent lands, under the ownership of two friendly nations, are forever preserved from any real defacement of their scenery by commercial enterprises. The honor of first suggesting this preservation of the scenery has been claimed by many persons. But the first real suggestion, though made without details, came from two Scotchmen, Andrew Reed and James Matheson, who in 1835, in a volume describing their visit to the Congregational

THE MAID OF THE MIST.

(Illustrating the Indian legend.—*From a painting.*)

churches of this country, first broached the idea that Niagara should "be deemed the property of civilized mankind."

INDIAN LORE.

This region is rich in Indian lore and tradition (which is Indian history) never yet thoroughly collected. Commencing far back when the Neuter nation, or more probably an earlier race, dwelt hereabouts, they worshipped the Great Spirit of the Falls, their worship culminating annually in the sacrifice of the fairest maiden of the tribe to the Great Spirit of Niagara, sending her over the Falls in a white canoe laden with fruits and flowers; next, their inter-tribal wars; later on, the temporarily successful but ultimately inevitable futile attempt of the Neuter nation to maintain a neutral existence; the use of Goat Island as the burying ground of great chiefs and warriors, and their adoration of the island because of such use, and the subsequent annihilation of the Neuters as a distinct tribe by the Senecas, form an unwritten page of historic Niagara which will probably never be com-

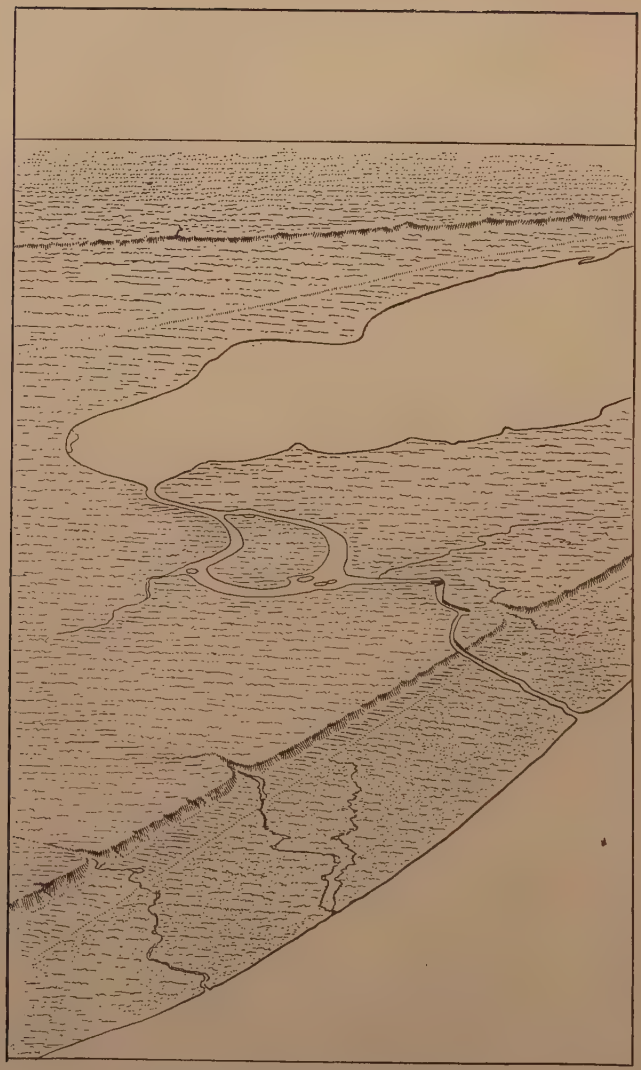
pleted with the accuracy that its importance demands.

LOCAL HISTORY.

To later local history in different aspects, we can only refer: To the engineering triumphs in the various bridges that span this river and the attendant benefits to this region; to the famous achievements of Blondin and others who have crossed the gorge on a rope; to the trip made by the Maid of the Mist in 1861, under the guidance of Joel R. Robinson from Niagara to Lewiston—the only boat that has ever successfully done so—proving, so far as that portion of the river is concerned, what the courts have held, that the Niagara River throughout its entire length is a navigable stream; to men who, like Francis Abbot, have associated their names with the Falls in one way, or like Captain Webb, with the Rapids in another way; to the fall of Table Rock in 1850, showing to this generation the undermining process by which Niagara has cut the gorge; or to the numberless fatalities which have annually occurred, some by accident, some intentionally.

Each of these in one way or another has tended to make history, and to point out lines of thought whose deductions must benefit future generations, and to all these which are necessarily blended with Niagara's history, we can but refer in this way.

Such, in outline, and with almost brutal brevity, is the foundation for that great work to which some master mind will some day devote its energies, and produce, to its own fame and to the benefit of international literature, a work whose pages shall contain events as yet imperfectly recorded and whose subject may be the words of our title, *Historic Niagara.*



BIRD'S-EYE VIEW OF NIAGARA RIVER.

THE GEOLOGY OF NIAGARA FALLS.

By Prof. N. S. Shaler,

Dean of the Lawrence Scientific School, Harvard University.

The effect of the more majestic spectacles of Nature is to turn the mind of the observer away from the philosophy of the events which he is observing. This is a natural and wholesome action of all splendid things; he is indeed unhappy who flies at once to speculation as to the cause of that which he for the first time freely beholds. There is, however, a second stage in the service which the great spectacles of the earth can do for us. This is where we seek to understand the ways in which the offering is made to our souls. The well-trained naturalist, indeed any one who is attentive to the æsthetic as well as the rational opportunities of the world, learns in a manner to combine these impressions which may come to him

by instinctive appreciation and by knowledge. To him the beautiful and the magnificent are none the less moving because he sees them in the perspective of history, or in the great assemblage of causations. It is the fairest province of science to afford these accessories of understanding so that the beauty of Nature may make a deeper impression upon the mind of man. Its work should in no wise diminish our perception or esteem of the beautiful; it should in fact unite these motives with our ordinary thought. Therefore it seems fit that we should consider the lessons which may be derived from a study of this great waterfall.

The first step towards the comprehension of any such feature as Niagara Falls should lead the student to an understanding of a general kind as to the range of the phenomena with which it is allied. We will, therefore, begin our inquiry by a brief consideration as to the various kinds of waterfalls, and the conditions which produce them. It is easy to recognize the truth that all streams tend to form continuous and uninterrupted slopes down which their waters course from the highlands to the sea. It is to this principle, indeed, that we

owe the fact that nearly all great rivers are freely navigable, and the most of the lesser are, for the greater part of their length, fit for small boats. Wherever we find a river in the tumult of a waterfall or of a cascade we readily note that it is steadfastly engaged in destroying the obstruction, and that, given geologic time enough, it will wear a channel down which its waters may glide quietly to the deep whence they came, and to which they inevitably return. If a new continent should be elevated, and rivers formed upon it, they would quickly develop a host of waterfalls. If the continent were high it would be a land of cascades. Gradually, as the land became older, these barriers in the way of the descending water would be worn away. With the formation of each mountain system, however, or with the occurrence of other accidents, such as those which are brought about by a glacial period, the paths of the streams would be disturbed, and the rivers would once again have to contend with obstructions which they seek to remove. Philosophical geographers now recognize the fact that the presence of waterfalls in a country means that the topography is, in a

geological sense, new; that the region has either recently been uplifted from the sea, or has, not long ago, undergone considerable revolutions, which have changed the shape of its surface.

Among the many different conditions which produce cataracts, we may note the following groups, which include the greater part of these accidents: In mountain districts small streams gathering in the tablelands or upland valleys often encounter a precipice down which they find their way in successive leaps. The cliffs over which they tumble are not, as is the case at Niagara, the product of the stream's action, but have generally been formed by a fault or a break in the rocks, the strata on one side of the disruption having been lifted so that a wall-like escarpment is created. In other cases the valley has been deeply carved by a stream of fluid or of frozen water, a river or a glacier. Waterfalls of this nature, though rarely of great volume, afford the most beautiful and highest cascades in the world. Those of the Yosemite Valley, or of Lauterbrunnen, in Switzerland, are excellent examples of this kind.

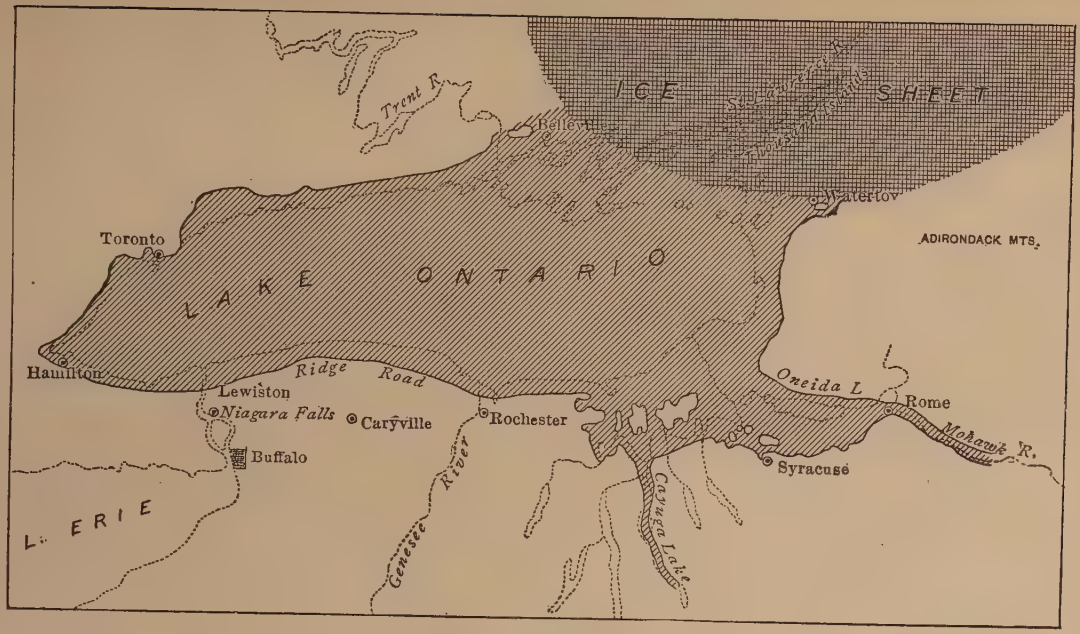
Wherever a stream, be it small or great, encounters in its course conditions in which it passes from a hard to a soft rock, or rather we should say from strata which it does not easily attack to other deposits which are readily worn away, the change is commonly marked by a rapid or waterfall. This alteration may be due to any one of many causes. Commonly it is brought about by a dike, or fissure filled with volcanic rock, which lies across the channel of the river. In our limestone rocks an ancient coral reef, buried in the strata, may produce a considerable cascade. The Falls of the Ohio at Louisville are due to the fact that such an ancient reef lies athwart the path of that river.

Along the seashore wherever the waves have carved, as they often do, an overhanging steep, the streams, which may originally have flowed down gently declining beds, tumble over precipices, sometimes falling, as on the north shore of the Island of Anticosti, directly into the ocean. In all such cases we may assume that the cliffs have been driven backward into the land by the effect of the surges.

By far the commonest origin of waterfalls is

to be found where horizontal stratified rocks arranged in alternating beds of hard and soft character are flowed over by a considerable stream. In these conditions the bed of the river is apt to lie on one of the hard layers upon which it courses until it cuts the layer through; then encountering the underlying soft materials it quickly wears them away down to the level of the next resisting stratum, where the process is repeated, forming, it may be, a dozen steps of descent in the course of a few miles. Each of the "treads" of such a stairway is apt to be many times as wide as the fall is high; but where the river has a great volume the down rush of water is apt to break up the lower-lying harder layers so that one great fall is produced. The reader will do well to see the beautiful system of step cascades known as Trenton Falls, where West Canada Creek descends from the highland about its source through a beautiful gorge of its own carving in many successive leaps.

The foregoing brief story concerning the natural history of waterfalls has led us to the point where we may begin our inquiries concerning the genesis of Niagara. This fall be-



MAP OF LAKE IROQUOIS.

(EXPLANATION.—Modern hydrography in dotted lines. Ancient lake area shaded. Ice sheet cross-shaded.)

longs to the last-mentioned group of cascades, that in which the course of the river is determined in a great measure by the diverse resistance which horizontally-imbedded rocks opposed to the wearing action of the water. In order, however, to face the many interesting questions which this river and fall present to the naturalist, we must ask the reader at the outset to obtain a clear idea as to the conditions of the valley of the stream from the point where it leaves Lake Erie to that where it enters Lake Ontario. The ideal way to obtain this impression would be to view the country from the summit of a tower having a height of five hundred feet or more, standing at a point near the present line of the falls. It is indeed most desirable from the point of view of the teacher, as well as others who love wide views, that such a "coign of vantage" should be constructed. In passing, we may remark that such an outlook would enable the observer to command the whole field of nearly level country from lake to lake. The student would thus be able to perceive directly what he can only otherwise infer from the maps and bird's-eye views. Using, however, these last-

named means of illustration, we readily observe the following facts concerning the course of Niagara River. We follow the prevailing fashion in terming this stream a river. It is, in fact, a mere strait connecting two fresh-water seas, the one lying about three hundred feet above the other.

Near its point of exit from Lake Erie the stream passes over a low uplift of the strata which somewhat interrupts its flow. A little way on in its path the tide is divided, enclosing a large island and some smaller isles. Its movement is slow, and in general the condition of the stream and its banks reminds one of the lower parts of a great river where it is about to enter the sea. The striking feature is that, from Lake Erie to Goat Island, the stream has no distinct valley. It has evidently done none of that downward carving which is so conspicuous a feature in the work of all ordinary rivers where they flow at a considerable height above the ocean's level. In part this absence of a valley is to be accounted for by the absolute purity of the water. Ordinary rivers bear much sediment, the coarser parts of which are driven along the bottom, continuously though

slightly wearing the bed-rock away as they rub over it; but in the Niagara all these sediments which the streams bring from the uplands are deposited in the chain of the Great Lakes.

At Goat Island the conditions are suddenly changed. In the rapids and in the main falls the river descends about two hundred feet into a deep gorge, through which it flows as far as Lewiston in a more or less tumultuous manner. At this point the channel passes through the escarpment which borders the southern margin of Lake Ontario. Here it ceases to flow as rapidly as before, the tide of waters finding ample room in the deep channel for a leisurely journey to the lower lake.

The gorge of the Niagara, though deep, is very narrow; to the eye of the trained observer it appears almost as unlike an ordinary river valley as is the path of the stream above the cataract. Everywhere the walls are steep; there is no trace of the alluvial plain which normally borders great rivers; nor do we find the slope of country toward the edge of the cliff which is so characteristic of ordinary valleys. This depression, indeed, is a true cañon, a trough carved by a main stream without any

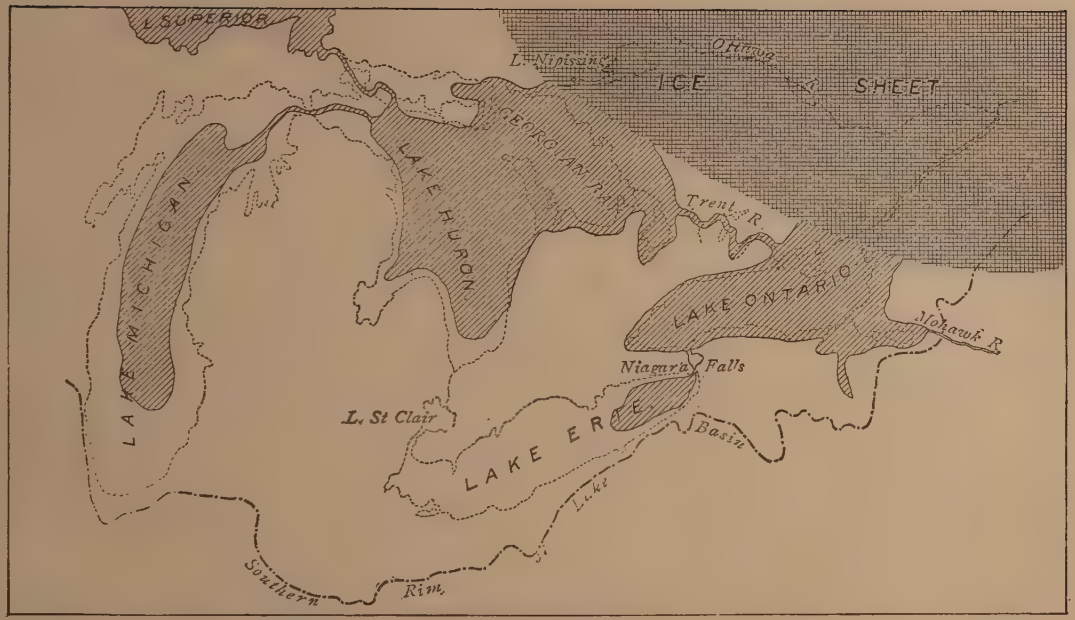
Photograph by Koonz.

THE ICE PALACE.

coincident work of erosion effected by the rain, frost, and water-courses operating on either side of its path. These features have led geologists, as they well may lead any intelligent observer, to the conclusion that the Niagara River is from beginning to end a new-made stream; a watercourse which originated not as most of our American rivers have in remote ages, but in the geological yesterday. The reason for this sudden coming into existence of the Niagara, the steps which led to its invention, are now undergoing a very careful discussion through the labors of several able geologists.* Although there is much which is still doubtful concerning the history of this singular stream, a great deal of interest has been well ascertained. The outlines of this matter we will now endeavor to set before the reader.

In endeavoring to comprehend the history

* The literature concerning the problems of the Niagara River is abundant, but widely scattered. The ablest single contribution to the subject is by Mr. G. K. Gilbert, Geologist U. S. Geological survey. It is contained in the sixth annual report of the Commissioners of the State Reservation at Niagara, for the year 1889.—Albany, James B. Lyon, Printer, 1890. References to various other treatises on the subject may be found in the foot-note of that paper.



HYPOTHETIC HYDROGRAPHY AT A DATE BEFORE THE MELTING OF THE GREAT GLACIER FROM THE ST. LAWRENCE VALLEY.

(EXPLANATION.—Water-parting in heavy broken line. Modern hydrography in light broken lines. Ancient rivers in full lines. Ancient lakes shaded. Ice sheet cross-shaded.)

of Niagara, it is necessary to take account of the singular conditions presented by the great valley in which it lies. The St. Lawrence is on some accounts the most curious of all the great vales which geographers have had an opportunity to study. The most of the river-basins in the world have their boundaries defined by a considerable elevation. If, here and there, they have a low side over which we may pass to a neighboring valley without traversing a decided water-shed, the partial breach of the boundaries is very limited in its length. In the St. Lawrence valley, however, from the lower end of Lake Ontario to the mouth of Lake Superior, the basin on its southern side is but ill-defined.

The low, broad ridge which separates the drainage from that of the streams which flow into the Hudson, or into the Mississippi, is frequently breached by depressions through which the waters belonging to the Great Lakes system may readily be discharged whenever their elevation is considerably altered, or when by chance a barrier is interposed to their exit through the Gulf of St. Lawrence. Accidents of this description have been probably of fre-

quent occurrence, so that from time to time the geographical relations of these waters have been greatly changed.

The Great Lakes of the St. Lawrence valley were probably in existence before the last glacial period, though they were doubtless extended and somewhat modified in form by the wearing of the rocks which occurred in that wonderful age. With the beginning of the glacial period the ice-sheet of eastern North America, which is now limited to Greenland, rapidly extended its bounds over the land to the northward of the Great Lakes. It soon filled their basins, and extended southward until its margin attained the Ohio River where Cincinnati now stands, and lay over the head-waters of all the valleys of the streams which pour from the South into the Great Lakes. It is easy to see that such an ice-sheet having the depth of a mile or more would profoundly disturb the drainage of these rivers. In its advance it would first create a dam across the waters of the St. Lawrence River, compelling the lakes to rise until they discharged through some of the low places on their southern boundary; next it must have filled their basins

HYPOTHETIC HYDROGRAPHY AT A DATE AFTER THE MELTING OF THE GREAT GLACIER FROM THE ST. LAWRENCE VALLEY.

(EXPLANATION.—Water-parting in heavy broken line. Modern hydrography in light broken lines. Ancient rivers in full lines. Ancient lakes shaded.)

with ice, and deepened the sheet until its surface lay thousands of feet above their floor. We cannot trace the history of these alterations which the advance of the glacial envelope brought upon this field of land and water. But the steps in the alterations may be inferred from what happened when the envelope retreated stage by stage until it vanished from the continent, or at least from the part of the field with which we are concerned. For a time the barrier lay in such a position that the waters of the lakes below Superior were barred out from the passage of Niagara, flowing over into the valley of the Ohio through a channel passing by the site of the City of Fort Wayne, and thence into the Wabash River. This old waterway has been preserved with unmistakable clearness. With the further retreat of the ice-front to the northeastward, the line of the barrier was withdrawn to near the present mouth of Lake Ontario, where it flows into the St. Lawrence River. At this time the level of the Great Lakes was lowered by successive stages, though on the whole rather suddenly, to the amount of five hundred and fifty feet.

With the last mentioned condition of the ice-barrier the exit of the Great Lakes changed to a path which led through Central New York, down the valley of the Mohawk River. The channel still shows the marks of the great tide of water, probably as great in its volume as that which now passes Niagara Falls. Those who journey by the New York Central Railway to and from Albany may note at Little Falls the broad gorge of the sometime great river which is now occupied by a relatively small stream. It might be supposed that at this stage the observer would have found the Niagara River flowing in somewhere near its present position. But here comes in one of the extraordinary accidents of that period of geographic wonders, the great Ice Age. When the ice lay over the country to the north of the Great Lakes, the part of the continent which it occupied appears to have been borne down by the weight of the mass in such a manner that it sloped to the northward at the rate of two or three feet to the mile. The result was that the basin of Lake Erie was to a great extent dry, and that of Lake Huron did not connect across to the southward through Lake

St. Clair, but through Georgian Bay, and thence by a channel occupying the site of the Trent River to the northern part of Lake Ontario. At a yet later stage, when the ice-barrier was still further withdrawn, so that the channel of the St. Lawrence was open, another channel was found by way of the Ottawa River, so that the upper lakes no longer emptied by way of Lake Ontario.

After the ice passed completely away from this part of the country, the land recovered from its southward down-tilting. Lake Erie regained its waters, and the tide from Lakes Michigan and Huron began to flow, as at present, by way of the Detroit River and Lake St. Clair. This was probably the age when the present Niagara River came into existence. We have already noted the fact that as a whole the valley of the Niagara, both above and below the Falls, appears to be a piece of stream-carving done in very modern times. Although it doubtless antedates the earliest chapters of human history of which we have any written records, it almost certainly is newer than the records of man which we find written in certain ancient art-remains, such as those which

were found with the Calaveras skull in California. The stream may have begun its work not more than ten thousand years ago. It appears, however, that there was a pre-glacial Niagara.

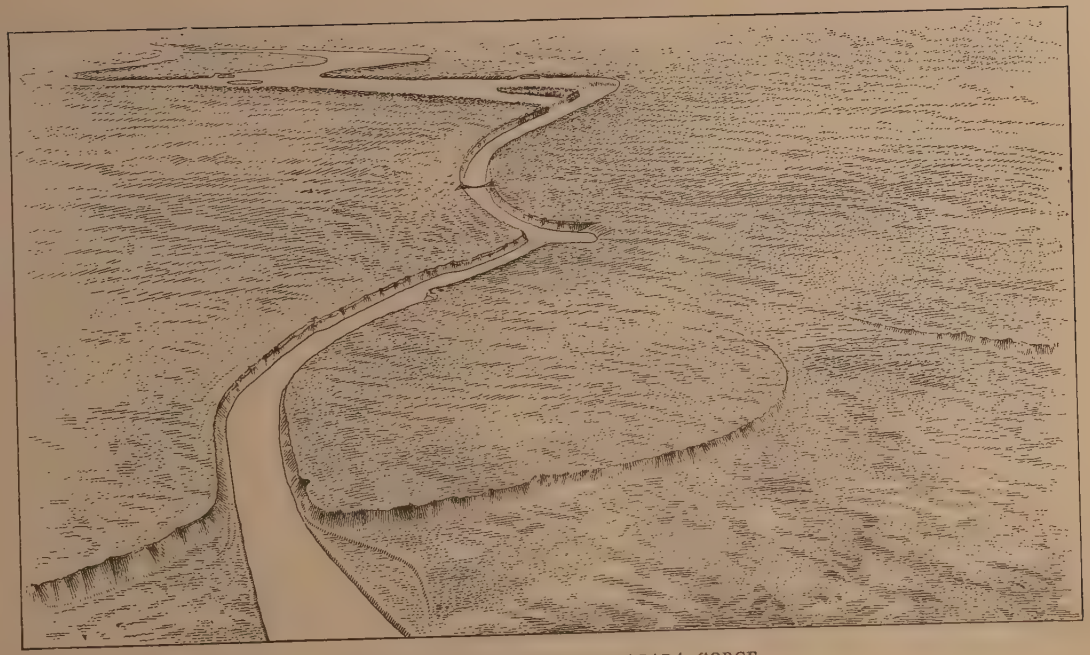
If the reader will go to the cliff which borders the lowland along the lake, a precipice carved at some period when Lake Ontario was higher than at present, and walk westward from the river, he will observe that at the town of St. David's, a few miles west of Queenston, the cliffs turn inland in a way which indicates that here of old was a valley through which a great river found its way to the lake. Going southward to the site of the Whirlpool we find there a point where, and where alone, the steep rocky walls of the Niagara cañon fail, and their place is taken by heaps of drift material, evidently brought to its present site by the ice of the glacial time which here, as in many other regions, filled the pre-glacial valleys with detritus. In the opinion of those who have most attentively studied the problem, there was an old Niagara River extending a part of its channel from St. David's to the Whirlpool, and probably from that point along much the same

line as the present stream toward the existing Falls. It is possible, however, that this old channel may have bent away to the west from the Whirlpool, and attained Lake Erie at some unknown point. If the old channel entered the present Niagara gorge at the pool we have to assume that when the stream, long dispossessed by the glacier, was permitted again to flow, it found the channel to St. David's so completely filled that it was easier to plunge over the Queenston bluff at a new point, and thence in the retreat of the Falls to carve the cañon back to its present site. It may be that a part of the channel above the enlargement at the Whirlpool was also carved in the old preglacial days, filled in with glacial waste, and afterwards swept clear of the obstruction by the mighty stream.

To the reader who has paid no attention to the geographic changes which were produced in the last ice time, such alterations in the path of a river may seem most improbable. The geologist, however, knows that these have been among the commoner incidents in this chapter of the earth's history. Hardly any of the considerable streams which existed within

the glaciated field before the advent of the ice escaped such perturbation. We could in an *a priori* way predict that a stream lying in the position of the Niagara River, where the amount of glacial waste deposited on the surface was very great, would be so far effaced by detritus that when the tide again began to flow, a portion at least of its channel would depart from its primitive position. In fact, among the many detailed inquiries which the geologist has a chance to make in the old glacial fields, there are few which are more interesting and, indeed, more perplexing than these which concern the relation of the ancient and existing river valleys.

From this general and rather wide consideration of the Niagara problem, which has brought us in face of some of the majestic actions of the past, we may now profitably turn to the detailed phenomena exhibited in the Falls and in the gorge between them and Queenston. The student will do well to begin these inquiries by a journey to the Cave of the Winds, where, penetrating behind a thin strip of the falling water, he can see something of the condition of the steep over which the cata-



BIRD'S-EYE VIEW OF THE NIAGARA GORGE.

ract plunges. He should also observe the rocks in the faces of the cliffs below the Falls. He will readily note the fact that the top of the precipice is occupied by a somewhat massive limestone. This rock is, it is true, divided by joints into large blocks, but these are hard, and are not much worn by the clean water which at the margin of the escarpment shoots clear of their face.

Below this limestone, which is extensively developed in New York and in the adjacent parts of the continent, and which most properly bears the name of "Niagara Limestone," there is a less considerable thickness of thin-layered shaley beds known as the "Niagara Shale." Yet below lie beds of the Clinton Age, composed of somewhat coherent limestone and shaley sandstone. At the base of the section of the Falls and steep, occupying more than half of its height, are the beds of the Medina formation, mostly made up of rather frail sandstones and thin reddish shaley layers. From what the reader can see in the Cave of the Winds, and what he can readily infer by observing the rocks bared in the cliffs near the Falls, he will readily understand that the Niag-

ara Limestone is the rock which takes the brunt of the work required in maintaining the precipice down which its river plunges. He will see also that this hard edge of the cliff projects beyond its base, thus giving free room for the fall to descend unbroken to the level of the stream below, and thence downward in the tumult of waters to the river bed to a greater depth than the visible face of the Falls.

From time to time as abundant general observations and accurate surveys show, the Niagara cornice of the wall is so far left unsupported by the more rapid wearing of the lower-lying softer beds that it breaks down by its own weight and falls in ruins to the base of the submerged cliff at the foot of the cascade. In this position we cannot see what becomes of the *débris*, but from what we may readily observe at other points we can make some interesting and trustworthy inferences. Along many rivers the student of such phenomena can find places where ancient cataracts have left their bases bare by the shrinkage or diversion of the streams which produced them; thus, at Little Falls on the Mohawk, which, as before noted, was once the path of exit of the

Great Lake waters, there was in the olden day a great cataract, the most of which is now above the level of the shrunken river. Here we find the rocks once trodden by the fall excavated in great well-like "pot-holes," some of which are ten feet or more in diameter, and with more than that depth. Each of these cavities has evidently been carved out by the bits of hard rock which the stream brought into them, the fragments having been made to journey round and round in a circle, forming what is often a dome-shaped chamber, widening toward its base. Such whirling movements of water may be observed in a miniature way where a stream from a hydrant falls into a basin. The base of the Niagara cliff is doubtless under-cut in the manner above described, the graving tools being the hard fragments which fall from its upper parts.

As we may behold in the Cave of the Winds, the whirlings of the water-laden air and jets of spray tend somewhat to soften and dissolve the layers of the shale, and thus to bring about that recession of the face which causes the limestone to jut beyond the base of the precipice. Beneath the level of the stream the vio-

lent swayings of the tormented water, beaten by the strokes of the Falls, doubtless serve yet more effectively to erode the soft rocks of the Medina formations. These actions coöperating with the pot-holing work keep the cliff ever retreating at its base at a little greater rate than at its summit, the limestone capstone falling only when the excavation beneath denies it effective support. In the above described features Niagara Falls are in no sense peculiar. There are probably within two hundred miles of their site over fifty cascades which have been engendered and maintained by the same simple conditions of an upper hard layer and lower-lying more easily worn strata. It should be remarked, however, that the greater the height down which the plunge of water takes place, and the larger its volume, the more vigorous is the assault upon the base of the cliff through the development of pot-hole excavations and the lashing which the troubled waters apply to the rocks. But for the fact that the tide of Niagara, though of vast volume, is perfectly clean, the retreat of the Falls precipice towards Lake Erie would have been far more rapid than under the exist-

ing conditions. If, in place of the marvellously pure lake water, the turbid stream of the Mississippi poured down this steep, the scouring action of the tumult beneath the fall would produce a vast increase of erosion. In these assumed conditions it might well be that the observer would find some sorry remnant of this great cascade far to the southward of its present position, perhaps within the limits of what is now Lake Erie. The difference in the effect of pure and turbid water, when forced against hard rocks, may be judged by the fact that while a glass window may be washed with a hydrant stream for an indefinite period without mark of abrasion, a similar stream of very turbid water will in a short time bring about a noticeable scratching of the glass.

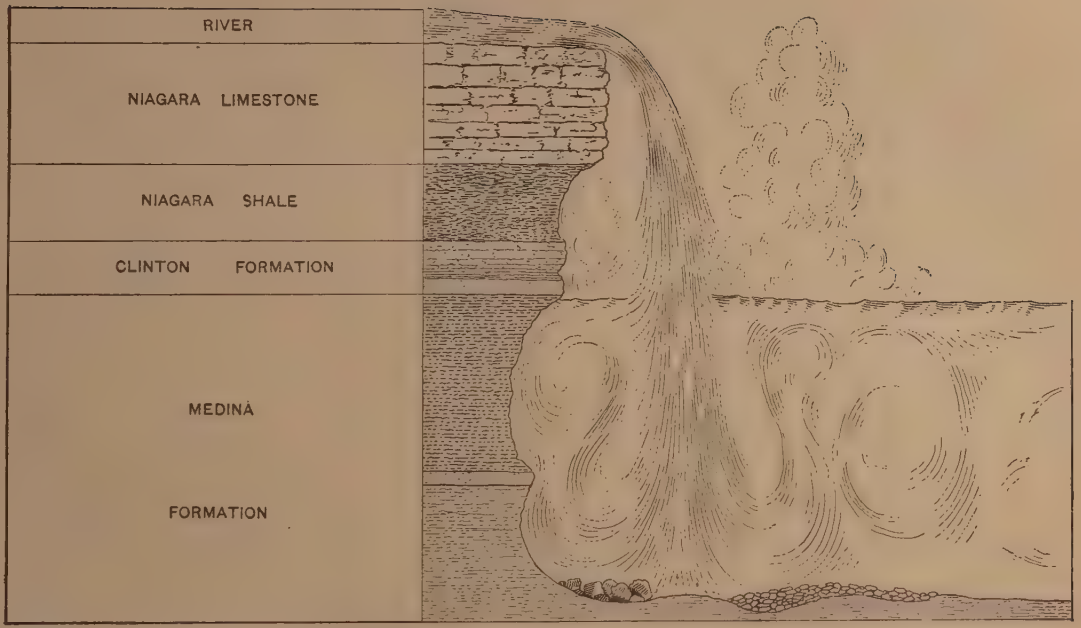
We are now in a position to understand how it is that the Falls have cut their way back through the great distance which separates them from the Queenston bluff over which the river flowed when it was first made free to follow its present course. It is a fine tour of the imagination to conceive how in some day after the ice age, when the country had assumed the elevation and attitude which re-

quired the development of the second Niagara River, the waters broke over the barrier near Buffalo, sweeping across the gently sloping country to the Queenston cliffs, there plunging down in what was at first a broken cataract rather than a fall, into the lowlands about Ontario, or it may have been directly into the waters of the lake, then more elevated than now. Very quickly the undercutting process above described must have converted the cataract into a vertical fall. In a few score years the process of retreat of the steep over which the water fell must have begun the excavation of the great gorge. It may help the reader to conceive the advance of the process to imagine a great auger boring away upon some soft material, the tool while turning being drawn slowly across the surface. In the similitude, the whirling waters at the base of the cascade, with their armament of stones, represent the auger, and the wide field of strata which have been carved the material which is bored by the moving tool.

For many years geologists, who are ever trying to measure the duration of the past, have endeavored to compute the time which

THE SOLDIERS' MONUMENT.

has elapsed since the excavation of the gorge below Niagara Falls began. It seemed at first likely that the time occupied in this great work might be reckoned in a somewhat definite way. Long ago it became evident that the Falls were slowly advancing up the river through the undermining of their base and the consequent crumbling of the overhanging limestone at the foot of the precipice. In 1842 Dr. James Hall made a careful map showing the position of the different parts of the Falls which were referred to monuments from which subsequent surveys could do work that would afford a basis for comparisons. A third of a century later another survey was made by officers of the U. S. Engineers. In 1886 Mr. R. S. Woodward made yet another careful map of the region. It now appears, however, according to Mr. G. K. Gilbert, that one or more of these delineations is somewhat in error, for at certain places the outline of the front projects beyond the position indicated by Hall's survey. After a careful consideration of these discrepancies, Mr. Gilbert says: "Nevertheless a critical study, not merely of the bare lines on the chart, but also of the fuller



SECTION OF NIAGARA FALLS, SHOWING THE ARRANGEMENT OF HARD AND SOFT STRATA, AND ILLUSTRATING A THEORY OF THE PROCESS OF EROSION.

data in the surveyor's notes, leads to the belief that the rate of recession in the central part of the Horse Shoe Fall is approximately determined, and that it is somewhere between four feet and six feet per annum. The amount of falling away at the sides of the Horse Shoe is not well determined, but this is of less importance, for such falling away affects the width of the gorge rather than its length, and it is the length with which we are concerned."

If we could assume that all the cutting of the gorge from the Falls to Queenston had been done since the stage in the retreat of the ice sheet when the river, as we now know it, began to flow, it would seem to be an easy matter to make an approximate computation as to the length of time which had been required to effect the task. As yet, however, we must hesitate to make an assertion, and, following the example of Mr. Gilbert, regard the problem as one which demands a far more careful study than it has as yet received before a judgment can properly be given. It is in a high degree improbable that the rate of retreat in the last forty years is anywhere near an average of the movement since the excavation of the cañon

began. Between the Falls and Queenston the rocks which have been cut through, though of a tolerably uniform nature, have here and there local peculiarities which may have greatly accelerated the rate at which the Falls have worked upstream. The height of the Falls has altered in this movement, and it is very probable that the volume of water may have been subjected to considerable changes through the alterations of climate which have attended the passing away of the glacial sheet. In addition to these evident sources of error there are others connected with the irregular tilting movements of this part of the continent which, as before noticed, have perturbed the drainage since the close of the time when the ice-sheet lay over the basin of the St. Lawrence.

At present it is tolerably safe to reckon the rate of retreat of Niagara Falls at about five hundred feet in a century. The reader may, if he pleases, assume that this is a fair measure of the speed with which the cascade has worked back from the Queenston escarpment; but if he makes the computation he should regard it as amusing rather than instructive

work. It is evident, however, that in the course of a thousand years the Fall is likely to be about a mile nearer Lake Erie than it is at present.

It is most probable that long before this planet has dispensed with the presence of man, and before any geological or geographical changes have effaced this land, the question will have to be met whether our successors shall permit the recession of the Falls to bring about the draining of Lake Erie and the adjacent waters. In the illumination of that time, indeed we may say in the light of our own, it will not appear difficult to arrest this natural development by which the recession of the cascade tends to drain away the lake from which its waters flow. New channels can be excavated which will divert the stream to some point on the line of the cañon where a fresh field of excavation can be provided for the cataract; or if it seems worth while, an excavation can be made beneath the stream at a point above the Falls, and a hard masonry support provided for the Niagara limestone, which, as we have noted, forms the cornice over which the water plunges.

If we may judge the motives of the future by those of the present, the decision as to the eventual fate of Niagara will rest upon economic considerations. Such considerations, indeed, are likely in course of time, and that not long, to lead to the utilization of the vast amount of power which now goes to waste at this point. So long as the factory had to be placed near its water-wheel the demand for the energy of the Falls was not very insistent. If, however, as seems most likely, electricians devise means whereby the tide of force made available by this leap of waters can be carried, without too much loss, to points five hundred miles or more away, we may find New York and Chicago, and a hundred other places, asking for a share of the energy which here goes to waste. It is indeed most likely that the arrest in the southward march of Niagara will be brought about by the diversion of its waters to the turbines which drive dynamos.

The foregoing considerations may make it evident to the reader that Niagara Falls should not be viewed as a mere spectacle. They should be taken as majestic natural phenomena which throw light on many important chapters

in the history of our continent. It is indeed doubtful if at any other place in the world the mind stimulated by a majestic scene is so naturally led to inquiries full of learned as well as of human interest.

THE FLORA AND FAUNA OF NIAGARA FALLS.

By David F. Day.

The traveller, who seeks for exhibitions of the grander forces of nature, will find his wishes abundantly gratified at Niagara. The fall of the waters of one of the greatest rivers of the world over a precipice of more than one hundred and fifty feet in height, and the constantly growing record of their power to channel through the enduring rock, will prove to him an absorbing, yet perplexing, subject for study. But the tourist, who takes enjoyment in the shadows of a forest, almost unchanged from its natural condition, in the stateliness and symmetry of individual trees planted by the hand of Nature herself, in the beauty and fragrance of many species of flowers growing without cultivation and in countless numbers, in the ever-varying forms and hues of foliage, and in the continually shifting panorama of

Photograph by H. Wilson Saunders.

SPRINGTIME AT NIAGARA.

the animated creation so near the scenes of human activity and occupation and yet so free from their usual effects, will find upon the borders of the river, within its chasm and on the islands which hang upon the brink of the great cataract, an abundant gratification of his taste and an exhaustless field for study.

To such a person—to all, in fact, who realize how ennobling it is to the heart of man to be brought at times face to face with Nature, whether in her beauty or her sublimity—it must always be the source of profound satisfaction to know that by the wise and liberal policy of the State of New York and the Dominion of Canada so large an area of country contiguous to the river and the Falls has been made a public property, and, placed forever beyond the reach of vandal hands, is now dedicated, for all time, to the highest and most exalted purposes.

Although in this volume a chapter has been devoted to the geology of Niagara, by one abundantly qualified for the task, nevertheless, for a proper presentation of the Natural History of the Falls and of the region of which it is the centre, a passing glance should here be

bestowed upon the geological record of Goat Island and the river within whose embrace it lies, to bring out more clearly the relation to it of its Fauna and Flora. For this purpose it is not necessary to explore the measureless periods of time in which the imagination of the geologist is accustomed to range at will. It is demonstrable that in a scientific sense the Island itself is of a trifling antiquity. In fact it would be difficult to point out in the western world any considerable tract of land more recent in its origin.

There is every evidence to believe that the Niagara River has excavated its enormous chasm since the close of the period known to geologists as the Glacial Age. Whether before the coming on of the Glacial Age the upper lakes were connected or not with Lake Ontario (a proposition which seems to be well received in the geological world), it seems very certain that thereafter Lake Erie, Lake Huron and Lake Superior sent their waters to the sea through an outlet which Lake Michigan then had into the Mississippi. A barrier not greater than fifty feet in height would suffice, even to-day, to reverse the current of Lake Erie and

Lake Huron and compel the discharge of their contents into the Mississippi, either by re-opening the old, abandoned channel at the head of Lake Michigan or by forming a new one. The barrier, which was broken down at the time, when in fact the physical history of the Niagara River began, may be pointed out with reasonable certainty to-day. A ridge near the foot of Lake Erie, which at one time extended in an eastward and westward course, crossing the present channel of the Niagara River, was that barrier. On either side of the river it attains a height of sixty or seventy feet above the present level of Lake Erie. It is almost unnecessary to say that this barrier was of glacial origin—an immense moraine. From its base, on the northerly side, to the verge of the cliff at Lewiston and Queenston, where the cataract began its work of erosion, the surface of the underlying rock rises steadily. At the summit of the cliff at Lewiston and Queenston, it has an elevation of thirty-two feet above the present level of Lake Erie.

It is fair to assume that although the lake (or river), after its irruption through this barrier, spread widely, yet that the beginning of

the excavation of the chasm at Lewiston was not long delayed.

Along the entire length of the river from Lake Erie to Lewiston and Queenston, the terraces left by the river, as from time to time it deepened and narrowed its channel, may be easily recognized. Often they show evidence that they were formed at the bottom of the river before the chasm had been excavated, being very largely composed of water-worn stones and materials, brought and deposited by the river itself from more southerly localities.

Goat Island is of this origin. It is in fact a portion of such a terrace. In a single place upon the island there is to be seen a small quantity of clay, possibly deposited by the glacier where it is found, but more likely to have been brought by the current of the river along with the other materials which make up the soil. Mixed with the soil of Goat Island and with that of the river terraces in other places, there may be seen an abundance of the half-decomposed remains of fluviatile and lacustrine Mollusca—shell-fish, univale, and bivalve, identical in species with those still living in the lake and river.

The period which has been employed by the river in the excavation of the chasm below the Falls, has, for more than half a century, been a most interesting study for the geologist. As early as 1841, Sir Charles Lyell, preëminent in his day as a geologist, from such data as he was then able to command, computed the time necessary for the work at no less than 35,000 years. Later geologists have sought, but unsuccessfully, to reduce the period. When, however, the island appeared above the river, substantially as it now is, presents a more difficult problem; but that the deposit of the materials of which its soil is composed, began as soon as the irruption of the river through the moraine, at the foot of Lake Erie, was accomplished, can scarcely be doubted. That 35,000 years have passed since the shells found on the island and in the terraces on either side of the river were deposited, and that no specific difference is to be discovered between them and their existing representatives and progeny, are facts full of interest to the evolutionist.

A calcareous soil, enriched with an abundance of organic matter, like that of Goat Isl-

and, would necessarily be one of great fertility. For the growth and sustentation of a forest, and of such plants as prefer the woods to the openings, it would far excel the deep and exhaustless alluviums of the Prairie States.

For the preservation of so large a part of the native vegetation of the island we must be thankful to the policy of its former owners, who, through so many years, kept it mainly in the condition in which Nature left it. To the naturalist, the hand of cultivation is often the hand of devastation. It has happily been spared, to a large extent, the ravage of the axe and plough, and from the still more complete spoliation which comes from the pasturage of horses and cattle. It would be very difficult to find within another territory, so restricted in its limits, so great a diversity of trees and shrubs—still more difficult to find, in so small an area, such examples of aboreal symmetry and perfection as the island has to exhibit.

From the geological history of the island, as has thus been told, it would be inferred that it had received its Flora from the mainland. This, no doubt, is true. In fact the botanist is

unable to point out a single instance of tree, or shrub, or herb, now growing upon the island, not also to be found upon the mainland. But, as has been remarked, the distinguishing characteristic of its Flora is not the possession of any plant elsewhere unknown, but the abundance of individuals and species which the island displays.

There are to be found in Western New York about one hundred and seventy species of trees and shrubs. Goat Island and the immediate vicinity of the river near the Falls can show of these no less than one hundred and forty.

Of our trees producing conspicuous flowers, such as the Cucumber-tree (*Magnolia acuminata*) and the Tulip-tree (*Liriodendron tulipifera*), there are but few specimens in the vicinity of the Falls. Abbé Provancher found the former growing at or near Clifton, and one magnificent specimen of the latter may be pointed out on Goat Island. In the reforestation of the denuded portions of the island, due observance to the planting of these beautiful American trees should be had.

Four Maples are represented upon the island: *Acer saccharinum*, *A. rubrum*, *A. dasy-*

carpum and *A. spicatum*. The first of these, the Sugar-maple, is perhaps the most abundant tree upon the island. Five species of Sumach (*Rhus*) grow upon the island or along the margin of the river. Our native Plum (*Prunus Americana*) and two Cherries (*Prunus Virginiana* and *P. serotina*) belong either to the island or the mainland, the latter, the Black-cherry of the lumberman, attaining upon the island a wonderful development. Near the gorge of the river, on either side, but not upon the island, the Crab-apple (*Pyrus coronaria*) abounds, diffusing in the early days of June its unequalled fragrance upon the air.

Three species of Thorn (*Cratægus coccinea*, *C. tomentosa* and *C. Crus-galli*) are to be met with upon Goat Island, adding in May and June no small part to the floral magnificence of the season. Six species of Cornel, including the flowering Dog-wood (*Cornus florida*); two Elders (*Sambucus Canadensis* and *S. pubens*) and six Viburnums (*V. Opulus*, *V. acerifolium*, *V. pubescens*, *V. dentatum*, *V. nudum*, and *V. Lentogo*), either on the island or the mainland, contribute greatly, in the spring and

summer months, to enlarge and diversify the display.

To find the Sassafras one must go down along the river as far as the Whirlpool. He will there meet with it, but not in profusion, on either side of the river. Our other native laurel, the Spice-wood (*Lindera Benzion*), is to be found handsomely represented on Goat Island.

Two species of Ash, the white and black (*Fraxinus Americana* and *F. sambucifolia*), are among the trees of the island, and are to be met elsewhere in abundance.

The only species of Linden or Bass-wood, which belongs to the vicinity, is the familiar one, *Tilia Americana.* It is plentiful upon the island, and of extraordinary size and beauty.

Of nut-producing trees the following occur:

The Butternut (*Juglans cinerea*), the Black walnut (*J. nigra*), the white Hickory (*Carya alba*), the hairy Hickory (*C. tomentosa*), the pig-nut Hickory (*C. porcina*) and the bitter Hickory (*C. amara*), the Beech (*Fagus ferruginea*), the Chestnut (*Castanea vulgaris*), the white Oak (*Quercus alba*), the post Oak (*Q. obtusiloba*), the Chestnut-oak (*Q. Muhlenbergii*),

the Bur-oak (*Q. macrocarpa*), the dwarf Chestnut-oak (*Q. prinoides*), the red Oak (*Q. rubra*), the scarlet Oak (*Q. coccinea*), the Quercitron-oak (*Q. tinctoria*), and the Pin-oak (*Q. palustris*).

Two species of Elm (*Ulmus Americana* and *U. fulva*), three Birches (*Betula lenta, B. lutea* and *B. papyracea*), one Alder (*Alnus incana*), six native Willows (*Salix nigra, S. lucida, S. discolor, S. rostrata, S. petiolaris* and *S. cordata*), and four Poplars (*Populus tremuloides, P. grandidentata, P. monolifera* and *P. balsamifera v. candicans*), are embraced within the Sylva of Niagara.

Of the cone-bearing family the number of species is not as great as might be expected. They are only six, distributed in five genera, as follows:

The White-cedar (*Thuja occidentalis*), the most abundant of the evergreens at Niagara; the Red-cedar (*Juniperus Virginiana*), unfortunately disappearing; the Juniper (*J. communis*), the American Yew or Ground-hemlock (*Taxus baccata v. Canadensis*), the White-pine (*Pinus Strobus*), and the common Hemlock-spruce (*Tsuga Canadensis*). The two last named spe-

Photograph by Nielson.

AMERICAN RAPIDS ABOVE GOAT ISLAND BRIDGE.

cies are not as plentiful upon the island as their beauty demands. They should be at once, and largely, replanted.

Of the herbs, producing showy flowers, which are to be found upon the island, the following may be mentioned, which by their profusion as well as beauty, make it in spring-time and early summer a natural flower-garden, wild indeed, but wonderfully beautiful:

Our two Liverworts or Squirrel-cups (*Hepatica acutiloba* and *H. triloba*), scarcely distinguishable from one another, except by the leaf, but of an infinite variety of color.

The dicœcious Meadow Rue (*Thalictrum dioicum*), more noticeable because of the peculiar beauty of its foliage than its conspicuousness of flower—it is as graceful as a fern.

The wild Columbine (*Aquilegia Canadensis*), to be found on the island, yet more abundantly along the chasm, where it displays its elegant blossoms of scarlet and gold, far beyond the reach of the most venturesome.

The May Apple (*Podophyllum peltatum*), a plant singular both in flower and leaf, but beautiful and always arresting attention.

The Blood-root (*Sanguinaria Canadensis*), a plant lifting up its large, clear white flower and its solitary leaf in the early days of spring.

Squirrel-corn and Dutchman's breeches (*Diclytra Canadensis* and *D. cucullaria*). Strange plants, but of great gracefulness and beauty. Abundant on the island early in May; the former species, rich with the odor of hyacinths.

Of the spring-flowering *Cruciferæ* to be found upon the island, the following deserve to be mentioned as notable for their abundance and beauty: The Crinkle-root (*Dentaria diphylla*), the Spring-cress (*Cardamine rhomboidea, v. purpurea*), and the Rock-cress (*Arabis lyrata*).

As many as four violets abound upon the island and its vicinity, adding their charms to the beauty of the month of May—*Viola cucullata, V. rostrata, V. pubescens*, and *V. Canadensis*, the last, remarkable among the American species, for its fragrance as well as gracefulness.

The Spring-beauty (*Claytonia Caroliniana*), the large, native Cranesbill (*Geranium maculatum*), the Virginian Saxifrage (*Saxifraga Virginiensis*), the two Mitre-worts (*Tiarella cordi-*

folia and *Mitella diphylla*), the spreading Phlox (*P. divaricata*), the creeping Greek Valerian (*Polemonium reptans*), now rather rare; the American Dog-tooth, Violet, or Adder's-tongue (*Erythronium Americanum*), the large-flowered Bell-wort (*Uvularia grandiflora*), the Indian Turnip (*Arisæma triphylla*), and the two Trilliums (*T. grandiflorum* and *T. erectum*), add largely to the spring contingent of attractive and conspicuous plants.

Later in the season, one may find the shrubby St. John's Wort (*Hypericum Kalmianum*), and one of the most graceful species of Lobelia (*L. Kalmii*), each rejoicing in a damp situation, and each, quite probably, discovered at the Falls, by Bishop Kalm, nearly a century and a half ago, and introduced by him from that locality to the notice of the botanical world. The name of the discoverer of these interesting plants is worthily commemorated in those which the great Linnæus bestowed upon them.

The summer time brings forward many attractive forms—the Grass of Parnassus (*Parnassia Caroliniana*), the Painted-Cup (*Castilleia coccinea*), an occasional lily, an orchid or two,

but of no great beauty, the Hare-bell (*Campanula rotundifolia*), and a large array of annuals.

Nor is the autumnal Flora of Goat Island uninteresting. Golden-rods (*Solidago* sp.), Sun-flowers (*Helianthus* sp.), Star-flowers (*Aster* sp.), the Downy Thistle (*Cnicus discolor*), and, at last, the triumph of October and of the dying year, the shorn Gentian (*Gentiana detonsa*), its graceful blossoms as blue as the summer skies.

In the region of the Falls, but not upon Goat Island itself, some plants of great beauty have been detected. Below the Whirlpool, two species of Bluets or Innocence (*Houstonia cærulea* and *H. purpurea*) are to be observed, the rare *Liatris cylindracea*, *Apocynum androsæmifolium*, the orange-colored Milkweed (*Asclepias tuacrosa*), the Fire-lily (*Lilium Philadelphicum*), the large, yellow Lady's Slipper (*Cypripedium pubescens*), the beautiful, low-growing Morning Glory (*Convolvulus spithamæus*), and wild Roses, as fragrant as beautiful.

The ferns of Goat Island and the region of the Falls are numerous. Among them may be mentioned: The Ostrich-fern (*Onoclea*

Struthiopteris), the Sensitive-fern (*O. sensiblis*), the Royal-fern (*Osmunda regalis*), the Interrupted-fern (*O. interrupta*), the Cinnamon-fern (*O. cinnamomea*), the Bladder-fern (*Cystopteris bulbifera*), Shield-ferns of various species (*Aspidium Noveboracense, A. Thelypteris, A. spinulosum, A. cristatum, A. Goldianum, A. marginale, A. Lonchitis*), and the Christmas-fern (*A. achrostichoides*); the Beech-fern (*Phegopteris Dryopteris*), only found at the Devil's Hole; the Walking-fern (*Camptosorus rhyzophyllus*), four Spleen-worts (*Asplenium Trichomanes, A. ebeneum*, abundant at Lewiston, *A. achrostichoides*, and *A. Filix-fœmina*), scarcely to be excelled in grace by any species; two Cliff-brakes (*Pellœa gracilis* and *P. atropurpurea*), the Common-brake, world-wide in its distribution (*Pteris aquilina*); the American Maiden-hair (*Adiantum pedatum*), and the common Polypody (*Polypodium vulgare*), peering, in many places, over the edge of the chasm into the depths below.

Of the Fauna of Niagara very much cannot be said. All the larger Mammalia, which abounded in the region whilst it was still the possession of the red man, have long since dis-

appeared. It seems almost as though they could never have resorted, habitually, to Goat Island. The access to it of the elk, the red deer, the bear, the panther, the lynx, the fox, and the wolf, common enough in the neighborhood, must always have been difficult, and their return to the mainland almost impossible. At the present time the quadrupeds inhabiting the island are probably only three, the Black-squirrel, the Red-squirrel, and the Striper-squirrel or Chipmunk. These may be seen, almost any spring or summer day, disporting themselves, without regard to the presence of man, in their leafy coverts.

The birds affecting the island and the gorge are not to be distinguished, in species, from those of the mainland. But, as would be expected, environment makes some species rare and others plentiful. The Robin (*Turdus migratorious*), the Oriole (*Icterus Baltimore*), the Blue-bird (*Sialia Wilsonii*), and the Gold-finch (*Carduelis tristis*), find so much of their food supply in door yards and cultivated land, that they are to be seen less frequently upon the island, or within the gorge, than elsewhere in the neighborhood. On the other hand,

birds of the deep and silent woods, like the Vireos, Wilson's Thrush (*Turdus fuscescens*), the Wood-thrush (*Turdus mustelinus*), and the Cat-bird (*Mimus Carolinensis*), are almost always to be seen and heard in the vicinity of the Falls or river.

Birds of the crow family, such as the common Crow, the Purple Grackle, and the Blue-jay were probably, at one time, plentiful; but they are now rarely seen, except as they are passing over from one side of the river to the other. Our common hawks may be included in the same remark.

Summer or winter, numerous gulls may be seen hovering over the river, between its high banks, below the Falls.

Late in the autumn, after other birds have taken their flight in the thick spray of the Red-cedars, great flocks of Cedar-birds (*Ampelis cedrorum*) are to be noticed, feeding socially upon the plentiful sweet berries of the tree. Probably they remain until the supply of food is exhausted.

The Bald-headed Eagle (*Haliætus leucocephalus*) was once a frequenter of the region of the cataract, but is now seldom seen. Prob-

ably he has learned to be wary and not unnecessarily to expose himself to the aim of the collecting naturalist. But, however that may be, without doubt the waters below the Falls were once a favorite resort to him. He was a devourer of fish, and, although powerful of claw and pinion, he did not disdain to save his strength by feeding upon such as had been killed or stunned in their passage over the Falls.

Of the birds of our region, which seem to fear the presence of man, and therefore retire to the unfrequented woods, it may be said that they are really plentiful in the shady nooks and recesses with which the gorge of the river abounds. The naturalist who would wish to make them a study, can do so satisfactorily, if he will but enter the woods at the Whirlpool or at Foster's Flat and patiently and quietly await their appearance. It is hardly possible that such a retiring species as the Indigo-bird (*Cyanospiza cyanea*) will fail to reward his watchfulness, or that a Scarlet Tanager (*Pyranga rubra*) will not soon flash like a meteor before his eyes. Likely enough the Kingfisher (*Ceryle Alcyon*) will leave his silent perch

and with a harsh cry dart down upon his scaly prey. Here, where the thick leaves make a twilight, even at midday, the attentive ear of the student of our birds will listen, with delight, to the bell-like notes of the Wood-thrush or the sweet cadences of the Cat-bird's real song.

THE UTILIZATION OF NIAGARA'S POWER.

By Coleman Sellers, E.D., Sc.D., etc.

If, when contemplating the grandeur of the Cataract of Niagara, we consider for a moment the energy represented by the enormous body of water as it falls into the gorge below, the question naturally suggests itself what this force must be, measured by the standards with which we are familiar, or, in other words, what would be the actual power of the Falls if all of the water passing from it could be utilized.

One computation places this total power at an amount so great that the world's entire daily output of coal would be barely sufficient as fuel to generate steam for operating pumps capable of returning to the level of the upper rapids the water which is discharged over the Falls into the lower river. The difference in level between the still waters above the upper rapids in the river and the gorge below is

THE GORGE ROAD.

Photographs by Arnold.

THE GORGE NEAR LEWISTON.

about 216 feet, and knowing this we could estimate the power of the Falls could we but determine accurately the amount of water which passes over it in any given time. To be sure, such measurements have been made, but as they were based on the mean velocity of the stream under ordinary conditions they are not altogether reliable, as the velocity is known to vary considerably, and is even materially affected by the direction and force of the wind. To arrive at any approximately correct estimate, therefore, the measurement should extend over a very considerable period of time, in order to embrace all of the variations in the velocity and volume of the water passing down the river at any given point, but from the data now available the total energy that the Falls may be assumed to represent has been estimated as about five million horse-power.

We have long been in the habit of associating Niagara Falls with its attractions as a pleasure resort, and as one of the world's wonders, but from early times its power has been utilized, to a limited extent to be sure, and industries have existed along the rapids above the Falls certainly as early as 1725, when a

sawmill was in use cutting timber for Fort Niagara. These early mills were located on the river bank at points where the greatest fall or head of water could be obtained, the water being led to the wheels by a race from a convenient point up stream, and then carried off when used by the most direct course again to the river. This is a method commonly employed in utilizing the flow of streams wherever artificial or natural conditions permit the development of power by means of falling water. Therefore, in 1847, when Mr. Augustus Porter, who owned most of the land now occupied by the city of Niagara Falls, outlined a plan upon which the so-called hydraulic power canal was projected, he adopted this recognized method as conforming to the best practice at the time, and planned to carry the water from above the upper rapids to the edge of the gorge below the Falls, to be utilized by mills located at that point. A company now known as the Niagara Falls Hydraulic Power and Manufacturing Company was organized, and, while the canal was virtually finished in 1861, it remained unused until 1870, when Mr. Charles B. Gaskell built a small flouring mill

on the site of the well-known group of larger buildings which have since formed a conspicuous feature of the gorge below the State Reservation.

The canal when first opened was but 36 feet in width and 10 feet in depth from the surface of the water. In addition to the grant giving a right of way 100 feet wide through what is now a populous portion of the city, property was obtained amounting to about 75 acres, with a frontage of nearly a mile on the high bluff overlooking the river below the Falls. Here the forebay or distributing basin was located at a level of about 214 feet above the surface of the lower river, and from this point the canal extends 4,400 feet in length across the town to its intake at the upper river just above the rapids leading to the American Falls.

Of late years the canal has been enlarged at its upper end to the full limit of the right of way, and this improvement is being extended over as much of its length as can be widened under existing conditions.

In addition to the mills on the high bank of the gorge, a power house has been erected at

the lower river's edge to take advantage of the fall from the surface of the canal above, and the present and prospective power available is estimated as follows, according to a recent publication:

By electrical transmission	19,037	H.-P.
By mechanical transmission	360	"
By hydraulic power used by five tenants	7,000	"
Total	26,397	"

Many years ago when the late Thomas Evershed was a division engineer of the State of New York, he advocated a plan for the development of power at Niagara Falls in which it was proposed to utilize a tunnel as a tail race to carry off both water and sewage, a plant to be constructed by a corporation organized to furnish power to manufacturing industries located on the level land east of the city, a mile above the Falls.

Interest having been revived in this method of utilizing the power of the Falls, about the year 1889 prominent capitalists became identified with a plan of development which contemplated placing the water wheels and turbines in pits to be supplied by short canals and

connected with a tunnel tail race and looking to the establishment of an industrial centre such as at Lowell, Fall River, Holyoke, and other places where power development is under the control of power companies. Prior to this time the state of the arts and industries had not created a sufficient demand for water power to warrant undertaking the development at Niagara Falls on a scale beyond what had been already attempted, nor was it until the last decades of the 19th century that improvements in the generation and transmission of electricity gave any marked encouragement to its use in this connection. To understand the value of the Evershed method of utilizing water power, it must be remembered that in the case of a long surface canal or head race, a hydraulic slope must be secured in order to establish a current of the required velocity. If such a canal, discharging into a forebay or reservoir at its lower end, is not provided with means for regulating the amount of water passing through it, the constant flow due to the hydraulic slope, if not fully utilized by the wheels, must overflow at the sluice way or weirs. This involves a waste

of water and power beyond what is utilized at the wheels, equal to that which is overflowing at the weir. When, however, there is but a short surface canal requiring no overflow and used in connection with a tunnel tail race, the only flow of water into the tunnel is that actually required by the wheel for the development of the power being used.

Proceeding on the lines of the plan above indicated, it was proposed, in reviving the Evershed scheme, to establish a central station to generate electric power for transmission to a distance, around which would cluster industries, each of which would be provided with its own hydraulic power plant supplied from short canals, and discharging the water from the wheels into a common tail race tunnel. To carry out the purposes of this enterprise the Cataract Construction Company was organized to undertake the work of construction for the Niagara Falls Power Company, which then had a charter, franchises, and options on two hundred acres of real estate. Coöperating with these companies, the Niagara Development Company, the Niagara Junction Railway, and the Niagara Falls Water Works

Company were organized, and these allied interests secured land controlling a river front of over two and a half miles, and with railroad communication with the several Trunk Lines passing through the city.

The first work of importance was the construction of the tunnel, which has a total length of a little over one and a quarter miles, and extends in a direct line from the north end of the power house, located between Buffalo Avenue and the river above the upper rapids, and passes under the Hydraulic Canal and the business portion of the city of Niagara Falls without affecting any portion of the ground or the thickly built-up section of the city over it. The upper end of the tunnel is 150 feet or more below the inlet canal at the power house, and from this it slopes gradually in its course toward the long river, where its portal may be seen at the water's edge a short distance below the new steel arch bridge and adjacent to the Government Reservation. The cross-section of this tunnel is of horseshoe form and the tunnel is lined with brick, the sides and roof being of hard brick, while the floor or invert is paved with vitrified brick of such

hardness that the sand blast test to which the material was subjected gave no evidence of abrasion. While the direction of the tunnel is in a straight line throughout its entire length, its slope is not wholly uniform, being at the rate of 4 feet per 1,000 at the upper end, the lower half sloping approximately at the rate of 7 feet to the 1,000 toward the portal, where for some few hundred feet the floor slopes still more rapidly, and is plated on the bottom and side with steel, forming a wave-like curve that brings the extreme end a number of feet below the main water level of the river. The back water standing in the tunnel thus presents a water cushion to the outgoing stream as it leaves the tunnel and passes the open cut beyond the portal. This hydraulic gradient necessarily reduces the head otherwise due to the difference of level 216 feet between the surface of the river above the upper rapids and the water in the gorge below the Falls. The sacrifice thus made is, however, unavoidable, as the slope is needed to obtain sufficient velocity to carry away from the turbines the water required to develop 100,000 horse-power through a tunnel of limited cross-

section. The nature of the rock through which the tunnel was driven made it necessary during the process of construction to support the roof and sides of the walls by strong timbers, which are replaced by the final lining of brick, forming an arch of such thickness as to insure ample stability. During the progress of the work careful supervision of the hydraulic cement used resulted in a structure in which the joints are as strong or stronger than the bricks of superior quality used in the lining. This was proven whenever it became necessary to cut through the walls to make lateral connections, the hard brick yielding more readily than the cement. The tunnel has been in constant use since 1895, and upon examination no sign of deterioration has been discovered. Nature, it seems, has assisted in the task of preservation, as the brick walls are found to be covered with a thin coating of vegetable growth which even the high velocity of the water seems unable to disturb, and which, therefore, acts as an additional protection to the brick work.

On its land at the upper end of the tunnel the Niagara Falls Power Company has located

its great power plant. Here the short inlet canal is 200 feet in width, extending inland from the river a distance of 1,200 feet, and decreasing in width to 120 feet at its upper end, where it is bridged by a stone structure leading from the office end of the power house to the building containing the electric transformers. By this canal the water is carried into the power house by short entrance channels each 14 feet wide and 17 feet in depth, which lead to the steel penstocks that feed the water to the turbines located in the wheelpit below the power house floor. These entrance channels are placed at intervals of 40 feet from centre to centre along the east wall of the power house, and in them are cased the steel sluice gates by which the admission of the water is controlled. The power house itself is a massive structure, built of stone to harmonize with the masonry of the canal, and the walls inside of the building are faced with white enamel brick. The steel roof-trusses that span the whole room are over 60 feet in width, and rest upon steel columns which extend beyond the face of the walls to carry the runway girders of an electric travelling crane of about 50

POWER HOUSE—EXTERIOR.

POWER HOUSE—INTERIOR.

tons capacity, which commands the entire power house floor. The north end of the power house is extended in width to the edge of the canal, and in the east wing thus formed, various offices of the company, occupying four floors, are situated, and are accessible on the ground floor by a doorway to the left of the high arched portal which forms the main entrance to the building. The entrance was so proportioned that during the work of construction loaded cars could pass through it into the main room of the power house, where the materials were unloaded and handled by the travelling crane. Over this main doorway the arch-stones radiate to the ceiling of the vestibule, beneath which they are intersected by sculptured stone work representing the seal of the company. This seal, designed by Frederick Macmonnies, the American sculptor, represents the Indian Chief Ni-a-ga-ra, standing in his canoe, paddle in hand, in the act of shooting the rapids. Around the border are represented the Muscalonge, the Kingfish of the Niagara River, alternating with arrow heads and one of the fossil shells of the Niagara group.

Through the office door at the left of the entrance, visitors have access by a flight of stairs to a platform at the level of the second story, from which a second short flight of steps leads to a bridge that crosses the main room of the power station. From this bridge a view can be obtained of the electric generators and machinery which occupy the ground floor of the building. The generators now installed are ten in number, and are remarkable for their simplicity as well as for the enormous power they are capable of developing. The rotating parts of each consist of 87,000 pounds of metal, which revolves at the rate of 250 revolutions per minute, suggesting, perhaps, a huge spinning top. They deliver a bi-phase alternating current of 2,200 volts' pressure to the bus bars enclosed within the two enamelled-brick structures which support the platforms upon which are placed the various instruments and devices for controlling and measuring the current, and which correspond to the usual switchboards of a power station. From these bus bars the current is carried by cables led in subways beneath the floor of the power house, extending under the bridge upon

which the visitor stands, and thence out of the building across the canal by a bridge to the transformer house on the opposite side, from which the current is distributed at whatever pressure is required by the various consumers.

Near each of the dynamos or generators in the power house (which, by the way, are technically termed "alternators," to distinguish them from direct current generators) may be seen the governing mechanism required to regulate their speed, which has to be maintained with great uniformity. The revolving part of each generator is connected by means of a vertical steel shaft to the turbines, which are located in the wheelpit at a depth of about 141 feet below the level of the water in the surface canal. Each turbine consists of a pair of wheels set about 10 feet apart, one above the other, at each end of a massive cast-iron "wheel case" which is supported by the side walls of the wheelpit, which, at this point, is 16 feet in width. As before mentioned, the water is carried to the turbines by means of steel tubes or penstocks of 7 feet 6 inches in diameter, which, when filled, contain a column of water weighing over 400,000 pounds, sup-

ported, as are the turbines and wheel case, by the walls. The speed of the turbines is regulated by means of metal ring-gates, raised and lowered by the governing mechanism, and their position determines the amount of water discharged, permitting but a slight leakage when entirely closed. So little friction is there in the bearings of the massive shafts connecting the water wheels with the generators above, that when the ring-gates are closed, and the slight leakage past them constitutes the only power, the rotating speed, though reduced, will be maintained at from 50 to 90 revolutions per minute, and the machinery must be brought to rest by a powerful brake, which, in turn, can only be relieved by shutting off the water at the main sluice gates and allowing the penstocks to be emptied. . This practically frictionless condition is due to a peculiar feature of the turbines, the upper wheel in each unit being acted upon from below by the pressure of the water in the wheel case, and the arrangement such that the total weight of the revolving parts, including turbine shaft and rotating parts of the generator, is supported on a cushion of water. One sec-

tion of the shaft is provided with rings which fit into grooves in the bearing, after the manner of the thrust-bearing system of steamship propeller shafts, but these rings have to resist a pressure of only 3,000 pounds up or down, according to the amount of work being done and the condition of the water cushion which carries the load when the machinery is in operation.

As a crowning example of what can be done by way of diminishing the friction in the vertical shaft transmission, it may be of interest to note here that the seventh generator as seen from the bridge in the power house has lately been provided with an oil thrust-bearing which is fed by pumps capable of delivering oil to it under a pressure of 400 pounds to the square inch. This oil thrust is of novel and original design, and supplements the collar thrust-bearing referred to, and has been introduced experimentally to take the place of the water cushion in event of passages to the upper turbine being obstructed, as by ice, in such a manner as to decrease the balancing pressure. In testing this device the turbine was revolved by electricity, using its dynamo as a motor

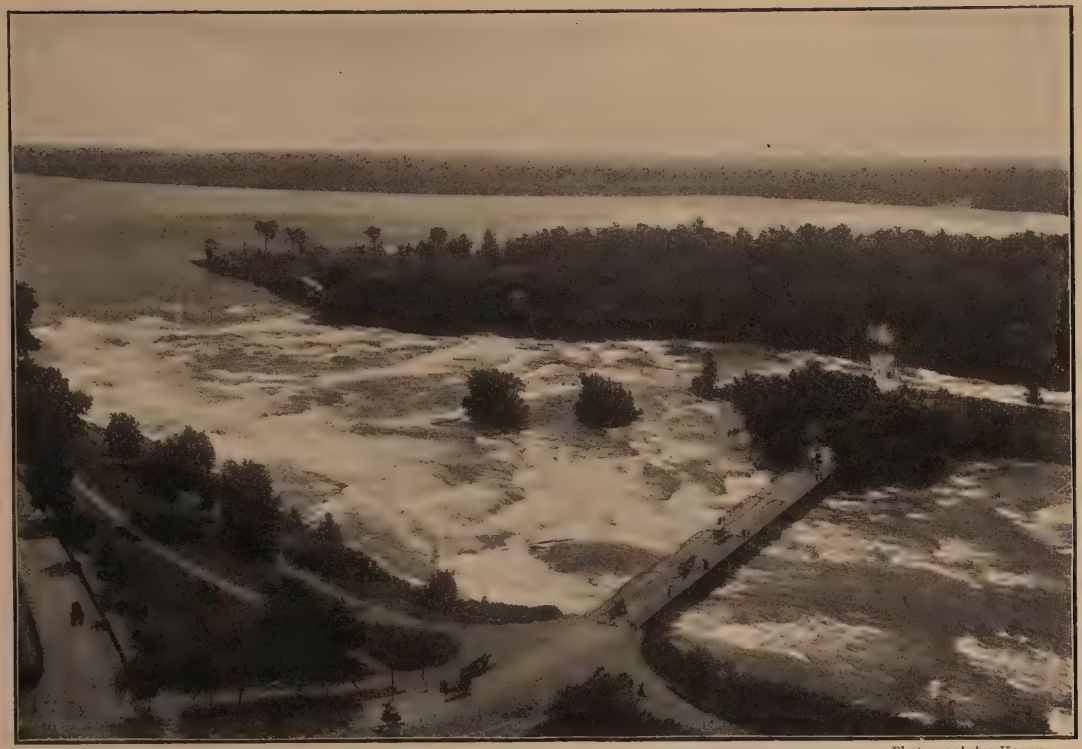
with its penstock empty, under which condition it was found that the bearing operated with perfect satisfaction while supporting a rotating load of 148,500 pounds. Furthermore, when the speed had been reduced to 90 revolutions per minute, ready for the application of the brake, and the main sluice gates entirely closed so that no power was applied to the rotating mass, the bearing was so entirely frictionless that fully 51 minutes elapsed before the enormous rotating mass came to an entire rest. This experiment also shows the utility of the field ring of the dynamo when acting as a fly wheel to steady the motion of the machine, and the inertia of the revolving mass is so great that it requires appreciable time for any change in the load to effect a change in the speed, thereby affording the governor the necessary time to cut off or increase the water supply, and thus keep the speed of the generator constant.

Between the fifth and sixth generators in the power house can be seen four direct-current dynamos, each of which is operated by an independent turbine of the so-called Francis type. These generators supply current to the

rotating field magnets of the large alternators, and they also supply to the various electric motors used throughout the building, such as the travelling crane, the ten sluice gates and the many pumps for oil, air, and water. These motors are also connected to the switchboard that they may be operated by direct current furnished by the exciters, or by transformed current, through rotary transformers, from the main alternators. At the north end of the power house are three machines which have the appearance of electric motors or generators, each with its horizontal axis and armature enclosed by stationary field magnets. These machines are controlled by a switchboard and are the rotary transformers above referred to. They constitute one of the important improvements made since the company first decided to adopt the alternating current system of generation and transmission, and from their collector rings and brushes four cables are laid from the static transformers located in the room below them by which the biphase alternating current is conveyed to the armature at the required voltage. On the opposite end of the armature are other com-

mutators and brushes, by means of which a direct current of 550 volts is delivered to the pole system of the Niagara Falls terminus of the trolley road leading to Buffalo and to other places on the line. Two of these small machines represent the steam engine and dynamo outfit which, with the requisite boiler plant, would be required to do the same work in generating power by direct current of low pressure, and the contrast between steam-driven electric installation and the direct delivery of electricity from Niagara Falls might have been seen to advantage when, in the large power house of the railway to Buffalo, three rotary transformers were set up in a corner to take the place of the many boilers, engines, and dynamos, which, since then, have stood unused.

Reference has already been made to the brick structures in the power house which correspond with the usual switchboard equipment of electric plants, and on which are placed the various instruments required by the attendants to regulate the current controlling the dynamos and the current being generated. On these elevated platforms can be seen a number



Photograph by Koonz.

A BIRD'S-EYE VIEW FROM THE TOWER.

of stands or cabinets, the larger of which are equipped with the instruments pertaining to each of the dynamos and the exciters. The smaller stands, on which are electric lamps, support the levers which operate the current breakers of the main circuits, the lights indicating when the current has been established. The switches or circuit breakers themselves are operated by compressed air, and are situated in the brick enclosure below the platform, where they can be seen through the glass doors that extend along one side of the structure. All of the recording instruments are located in the electrician's office at the north end of the building, where the main conductors pass out and across the canal to the transformer house on the opposite side.

A passenger elevator located near the fifth and sixth large generators gives access to the ten iron floors or platforms in the wheelpit, the lowest of which is 132 feet below the power house floor. The first platform immediately below the main floor is termed the "thrust-bearing deck," being at the level of the shaft bearing before mentioned that takes the end thrust of the rotating parts of the machinery.

Here also can be seen the driving mechanism of the governors, and some of the massive levers that operate the ring gates of the turbines as well as the neatly arranged system of iron and brass pipe conductors for the water and oil supply, and through open hatchways at this level one can see and appreciate the enormous depth of the underground works, the huge penstocks and the rotating shafts transmitting power to the turbines. Since completing the work beyond the three units installed prior to 1895, the entire length of the pit has been lined with brick, and all the various gangways and platforms constructed of iron and steel. The pit is lighted throughout by electricity, and being dry and kept scrupulously clean, the interesting features of the work below the power house floor may be seen to advantage and with comfort, as compared with the condition that existed during the early years of its use, when streams of water from underground springs jetted from the rock walls. These springs still exist, but their discharge is carried off by a perfect system of drainage back of the brick walls that form the lining. On the lowest deck may be

seen through a small trap-door the torrent of water which pours from the turbines, which are quite hidden by the spray that glistens in the light of the electric lamps.

After the completion of the power house to its full capacity the line of the Junction Railway was so changed as to make it advisable to bring its tracks into the south end of the building in order to admit the cars which deliver the lubricating oil required for the machinery, which is placed in tanks below the power house floor. From these stationary oil tanks of 5,000 gallons capacity the oil can be fed through a meter, by which it is measured, to the shaft bearings in the wheelpit, as it may be required to replace the slight loss in oil incident to the perfect automatic lubricating system. The oil is lifted by pumps to an overhead reservoir near the roof of the power house, from which height the various bearings are supplied by gravity, and after use the oil passes to the filtering or recuperating plant in the wheelpit, to be returned in good condition to the overhead source of supply.

On the opposite side of the inlet canal stands the transformer house, the building con-

structed of stone similar to that used in the other works, and in this building are located all of the large step-up transformers, which serve two purposes. First, to raise the pressure or voltage of the current from 2,200 volts to 11,000 or 22,000 volts as may be required, and secondly, to convert the bi-phase current generated by the dynamos into a tri-phase system, thus enabling three conductors of equal size to carry to a distance the same amount of electricity as four similar cables would do in the case of the bi-phase system. Four cables lead to each transformer, but three only are used in each of the several pole lines to Buffalo and to other points, including some of the near-by industrial establishments. From the transformer house a tunnel or conduit is extended through which the cables conveying current to local consumers are carried, and from this conduit the branches extend to the plants of the several consumers by an underground system similar to that employed in large cities.

Between the power house and the mouth of the inlet canal stands a building containing the filtering plant for the water supply of the city of Niagara Falls. The pumps used for lifting

the water from the canal to the filtering tanks are electrically driven, and the tanks are fitted with appliances which permit the daily cleaning of the filtering bed within them. The tanks are arranged in rows, and in each the water, as it comes from the river, can be seen pouring over a shield and flowing over the bed of sand through which it passes to a reservoir below. From this reservoir pipes convey the water to the wheelpit under the power house, where, in chambers excavated in the solid rock, arched and lined with brick, are powerful Riedler pumps actuated by impulse wheels of the Pelton type. The water by means of this machinery is pumped directly into the city mains at 60 pounds per square inch pressure for house domestic use, but in case of fire the pressure is raised to 120 pounds per square inch. The fire department of the city can therefore dispense with engines and fight the fires direct by hose only from the plugs in the street, the pressure being about the same as that obtained by the modern steam fire engines. A stand pipe on the hill north of the city serves to regulate the pressure so far as the water supply for domestic use is concerned,

and an automatic valve arrangement cuts off the stand-pipe to prevent overflow when the pressure is raised for fire purposes.

Visitors having access to the power house floor can obtain a fine view of the canal and the various buildings from a wide paved space between the power house and the canal wall. They can also see the long rack extending the entire length of the building in front of the inlets or channels that lead the water to the respective turbines. At the river end of the canal is a wooden boom to prevent logs and other large drifting matter from entering the waterways, the racks above alluded to serving to arrest the grass and other small floating matter that might otherwise enter the penstocks.

The river bed at the mouth of the canal has been deepened by dredging, and a broad stone causeway starting from the mainland immediately above this point crosses to Grass Island, which is thus rendered accessible for future improvement.

From this great central station now finished and in full operation, over 50,000 electrical horse-power is being utilized in establishments

at Niagara Falls, Buffalo, Tonawanda, Lockport and on the trolley line between Niagara Falls and these neighboring communities.

Electric power from this station operates all the street car lines and supplies all the municipal lighting in the city of Buffalo, distant twenty-six miles, and the Pan-American Exposition of 1901, to be held in that city, will be lighted and much of its machinery operated from this same central station at Niagara Falls.

A large part of this 50,000 electrical horse-power is used at Niagara Falls by twenty tenants, on the power company's lands, for the manufacture, by electrolytic and electro-chemical processes, of various metals and chemicals, and the company, in addition to furnishing this electrical horse-power, supplies 8,000 hydraulic power for the operation of the International Paper Company, its first power tenant in point of use of power.

The beginning of the 20th century finds the work well advanced toward a further extension of the system, already less than ten years old, and a new wheelpit to accommodate eleven additional turbines is being constructed on the east side of the inlet canal opposite the

present central station, but located nearer the river. The general architectural features of the power house to be erected will be in harmony with the existing buildings, but will provide more commodious offices and will be of improved fireproof construction throughout. The machinery will embody the latest improvements known and suggested by the five years of experience with the present installation, that has proved so successful and economical in the development of power at Niagara Falls, and the best effort of those who have coöperated in developing the engineering features of the present plan is being brought to bear upon the improvements in contemplation. Those who are familiar with the surroundings of Niagara Falls in the past cannot but be impressed by the improvements which have followed this great water-power development. Outside of the natural attractions of the Falls, framed in their beautiful setting of lands forever reserved as a park on both sides of the river, fine avenues are taking the place of former dirt roads, permanent bridges span the stream, new and more substantial buildings are being erected throughout the city,

while cheap and rapid transportation has been established to points of interest before not readily accessible. More than 1,500 acres of land are under the control of the Niagara Falls Power Company and its allied corporations, extending to the east of the city and partly within its limits, and great industrial establishments have grown up on reclaimed ground that ten years ago was too low for cultivation or use for any purpose.

The town of Echota, the name signifying "A place of rest," has grown up upon the lands of the allied companies, the dwellings and their arrangement forming a model village furnished with light, water, and a very complete and perfect sewage-disposal system, while, as before mentioned, the tracks of the Junction Railway bring all parts of the company's land, and the industries to which power is furnished, into direct communication with the great railways of the State that pass through the city of Niagara Falls.

In regard to the character of the power generated and distributed, it is interesting to note that while the Cataract Construction Company was considering the problem of develop-

ing the power of the Falls to the best interest of the Niagara Falls Power Company, those who directed its affairs, with admirable forethought and in the face of great opposition on the part of high technical authorities, adopted not only the alternating current system, whose advocates were then in the minority, but they fixed on a bi-phase alternating current of twenty-five full alternations per second, greatly below what was in use for lighting purposes but considered as favorable to the transmission of power. By limiting the rate of alternations to what is best adapted to power transmission, a very high efficiency has been achieved, and the multi-phase alternating current lends itself to all the requirements of electrical energy by subsequent conversion into higher or lower pressure or to transformation into direct current when desired. In point of fact, all the dynamos generate alternate current, which, in the case of direct current apparatus, is straightened out by the addition of a commutator on the generator. This commutator has a cylinder formed of segmental bars of copper placed together like the staves of a barrel, and separated by insulating material so connected

Photograph by Nielson.

THE AMERICAN FALL FROM BELOW.

to the coils of the armature that the brushes under which the bars sweep carry to the conductors the pulsations of electricity that are in the right direction, thus enabling the generator to furnish a constant or direct current. An alternating current, on the other hand, passes to the external circuit without rectification, and may be raised or lowered by static transformers, or it may be converted by rotary transformers into direct current of any required pressure or voltage. The application of this system in the development of power at Niagara Falls has proved most successful, and its wonderful elasticity has grown daily more apparent since the first alternators were put in motion in 1895.

Since the plant at Niagara Falls was first put in operation in 1895, the great advantage of power transmission by means of electricity has been recognized and has rapidly gained favor with manufacturers all over the country. As compared with all other modes of long distance transmission, it has been accepted as undoubtedly the best, and even for a short transmission, as from the steam engine or the water wheels to the machines to be operated, elec-

tricity has been found more economical than transmission by shafting, belts, and pulleys. Very many big establishments have erected large electrical generating stations to drive their machinery by motors, either connected directly to the machines to be operated or to groups of machines, not only saving thereby the loss due to ordinary shaft-transmission, but by doing away with belts and overhead pulleys, much space is secured for the better handling of material by cranes or other hoisting devices also operated by electricity. In the case under consideration, as at Buffalo, electricity delivered from Niagara Falls has proved to be not only cheaper than that developed by fuel, but has the advantage of constancy and of avoidance of all risk from sudden shortage of coal as caused by strikes or excessive cost of power incident to the rise in price of fuel. Great as are the coal fields of America, they are not exhaustless, nor does the coal yield the whole of its heat units when consumed. Even under the most improved methods of consumption and utilization it is but a small fraction of the theoretical power that serves a useful purpose, and Nature offers

no promise of reproduction of coal to take the place of that taken from the earth. On the other hand, the overflowing water of the great Falls of Niagara, which has been passing for ages almost unused to the sea, can be utilized as a source of power with positive assurance as to its continuity and stability at all times.

The Cataract of Niagara derives its power from the orderly operation of the laws of nature. The constantly acting force of gravitation speeds the river to the ocean, where its waters are vaporized and returned inland to be deposited by condensation on the rainsheds feeding lakes and rivers. Over the immense area which constitutes the drainage basin of the Great Lakes, the varying climatic conditions producing drought or flood seem to average themselves, and this, together with the vast storage capacity of the lake reservoirs, renders the volume of water subject to scarcely noticeable variations, exactly as the ocean seems to show little rise or fall other than that of the tide. To this condition is due the great uniformity of the flow of the river from Lake Erie to the Falls, making it the nearest possible approach to perpetual motion. A small im-

pounded mass of water rarely represents a uniform source of water power, as it is likely to be reduced by drought or suddenly increased by flood, according to the conditions affecting the condensation of the vapors passing inland from the ocean. It is this apparent uniformity at all seasons that gives the Niagara River, with its great lake reservoirs behind it, an almost unique advantage as a source of power, and has warranted such an expenditure of thought and money in its development. The capitalists who have invested so liberally in this great work have done so with full appreciation of the difficulties to be encountered, and with abiding faith in the ultimate success of the undertaking. The spirit of speculation has not controlled the development, but from the outset it has been the aim of those interested to make it a commercial success by the application of the best engineering methods and the highest manufacturing skill. Through what was known as the Niagara Falls International Commission, which met in London in 1890-91, careful and extensive consideration was given to the state of the arts in the generation of hydraulic power and its transmission

and utilization. The conclusions thus arrived at helped to determine the nature of the installation, and in carrying out the work every attention has been paid to durability and construction, economy in the use of power, and the best methods of securing the greatest continuity of service in generation and transmission to consumers under the climatic and accidental causes tending to interrupt it.

Although the nature and magnitude of the development were without precedent, and called for the invention of special machinery and appliances, the engineering skill applied to this, based on sound scientific principles and practical experience, raised the work above the level of mere theory and experiment, and this is evidenced in the successful operation of the plant and the high efficiency attained with it from the outset. The 50,000 horse-power now being utilized will, on completion of the work in progress, be increased to more than 100,000 horse-power, and this great energy is rendered available without disturbing in the least the natural beauties of the Falls. On the contrary, the development lends a new attraction to Niagara, both for those who are inter-

ested in the work from an engineering standpoint, representing as it does the most advanced state of the arts, and also to the general public, who cannot but be impressed with the magnitude of the undertaking and the thought of this great power being turned to the uses of man. Not only is it being utilized close at hand, but it is finding its way further and further from its source, and the frequently repeated inquiry as to whether this energy may be transmitted to Buffalo and distant points where fuel is dear is finding its answer in the increased demand for power thus transmitted, as each year discovers new markets and new uses for it.

THE NIAGARA BOOK.

PART II.

First Authentic Mention of N. F.	Mark Twain.
Niagara, First and Last.	William Dean Howells.
As It Rushes By.	Edward S. Martin.
Famous Visitors at N. F.	*Rev.* Thomas R. Slicer.

PART II.

THE FIRST AUTHENTIC MENTION.

By Mark Twain.

Extracts from Adam's Diary.

Monday.—This new creature with the long hair is a good deal in the way. It is always hanging around and following me about. I don't like this; I am not used to company. I wish it would stay with the other animals. . Cloudy to-day, wind in the east; think we shall have rain. . *We?* Where did I get that word? . I remember now—the new creature uses it.

Tuesday.—Been examining the great waterfall. It is the finest thing on the estate, I think. The new creature calls it Niagara Falls—why, I am sure I do not know. Says it *looks* like Niagara Falls. That is not a reason, it is mere waywardness and imbecility. I get no chance to name anything myself. The new creature names everything that comes

along, before I can get in a protest. And always that same pretext is offered—it *looks* like the thing. There is the dodo, for instance. Says the moment one looks at it one sees at a glance that it "looks like a dodo." It will have to keep that name, no doubt. It wearies me to fret about it, and it does no good, anyway. Dodo! It looks no more like a dodo than I do.

WEDNESDAY.—Built me a shelter against the rain, but could not have it to myself in peace. The new creature intruded. When I tried to put it out it shed water out of the holes it looks with, and wiped it away with the back of its paws, and made a noise such as some of the other animals make when they are in distress. I wish it would not talk; it is always talking. That sounds like a cheap fling at the poor creature, a slur; but I do not mean it so. I have never heard the human voice before, and any new and strange sound intruding itself here upon the solemn hush of these dreaming solitudes offends my ear and seems a false note. And this new sound is so close to me; it is right at my shoulder, right at my ear, first on one side and then on the other, and I am

Photograph by Nielson.

ROCK OF AGES AND CAVE OF THE WINDS.

used only to sounds that are more or less distant from me.

FRIDAY.—The naming goes recklessly on, in spite of anything I can do. I had a very good name for the estate, and it was musical and pretty—GARDEN OF EDEN. Privately, I continue to call it that, but not any longer publicly. The new creature says it is all woods and rocks and scenery, and therefore has no resemblance to a garden. Says it *looks* like a park, and does not look like anything *but* a park. Consequently, without consulting me, it has been new-named—NIAGARA FALLS PARK. This is sufficiently high-handed, it seems to me. And already there is a sign up:

KEEP OFF
THE GRASS.

My life is not as happy as it was.

SATURDAY.—The new creature eats too much fruit. We are going to run short, most likely. "We" again—that is *its* word; mine, too, now, from hearing it so much. Good deal of fog this morning. I do not go out in the fog myself. The new creature does. It goes out in all weathers, and stumps right in with

its muddy feet. And talks. It used to be so pleasant and quiet here.

SUNDAY.—Pulled through. This day is getting to be more and more trying. It was selected and set apart last November as a day of rest. I had already six of them per week before. This morning found the new creature trying to clod apples out of that forbidden tree.

MONDAY.—The new creature says its name is Eve. That is all right, I have no objections. Says it is to call it by, when I want it to come. I said it was superfluous, then. The word evidently raised me in its respect; and indeed it is a large, good word and will bear repetition. It says it is not an It, it is a She. This is probably doubtful; yet it is all one to me; what she is were nothing to me if she would but go by herself and not talk.

TUESDAY.—She has littered the whole estate with execrable names and offensive signs:

THIS WAY TO THE WHIRLPOOL.
THIS WAY TO GOAT ISLAND.
CAVE OF THE WINDS THIS WAY.

She says this park would make a tidy summer resort if there was any custom for it. Summer resort—another invention of hers—just

words, without any meaning. What is a summer resort? But it is best not to ask her, she has such a rage for explaining.

FRIDAY.—She has taken to beseeching me to stop going over the Falls. What harm does it do? Says it makes her shudder. I wonder why; I have always done it—always liked the plunge, and the excitement and the coolness. I supposed it was what the Falls were for. They have no other use that I can see, and they must have been made for something. She says they were only made for scenery—like the rhinoceros and the mastodon.

I went over the Falls in a barrel—not satisfactory to her. Went over in a tub—still not satisfactory. Swam the Whirlpool and the Rapids in a fig-leaf suit. It got much damaged. Hence, tedious complaints about my extravagance. I am too much hampered here. What I need is change of scene.

SATURDAY.—I escaped last Tuesday night, and travelled two days, and built me another shelter in a secluded place, and obliterated my tracks as well as I could, but she hunted me out by means of a beast which she has tamed and calls a wolf, and came making that pitiful

noise again, and shedding that water out of the places she looks with. I was obliged to return with her, but will presently emigrate again when occasion offers. She engages herself in many foolish things; among others, to study out why the animals called lions and tigers live on grass and flowers, when, as she says, the sort of teeth they wear would indicate that they were intended to eat each other. This is foolish, because to do that would be to kill each other, and that would introduce what, as I understand it, is called "death"; and death, as I have been told, has not yet entered the Park. Which is a pity, on some accounts.

SUNDAY.—Pulled through.

MONDAY.—I believe I see what the week is for; it is to give time to rest up from the weariness of Sunday. It seems a good idea. . . . She has been climbing that tree again. Clodded her out of it. She said nobody was looking. Seems to consider that a sufficient justification for chancing any dangerous thing. Told her that. The word justification moved her admiration—and envy, too, I thought. It is a good word.

TUESDAY.—She told me she was made out

of a rib taken from my body. This is at least doubtful, if not more than that. I have not missed any rib. . . . She is in much trouble about the buzzard; says grass does not agree with it; is afraid she can't raise it; thinks it was intended to live on decayed flesh. The buzzard must get along the best it can with what it is provided. We cannot overturn the whole scheme to accommodate the buzzard.

SATURDAY.—She fell in the pond yesterday when she was looking at herself in it, which she is always doing. She nearly strangled, and said it was most uncomfortable. This made her sorry for the creatures which live in there, which she calls fish, for she continues to fasten names on to things that don't need them and don't come when they are called by them, which is a matter of no consequence to her, she is such a numskull, anyway; so she got a lot of them out and brought them in last night and put them in my bed to keep warm, but I have noticed them now and then all day and I don't see that they are any happier there than they were before, only quieter. When night comes I shall throw them outdoors. I will not sleep with them again, for I find them clammy and

unpleasant to lie among when a person hasn't anything on.

SUNDAY.—Pulled through.

TUESDAY.—She has taken up with a snake now. The other animals are glad, for she was always experimenting with them and bothering them; and I am glad because the snake talks, and this enables me to get a rest.

FRIDAY.—She says the snake advises her to try the fruit of that tree, and says the result will be a great and fine and noble education. I told her there would be another result, too —it would introduce death into the world. That was a mistake—it had been better to keep the remark to myself; it only gave her an idea —she could save the sick buzzard, and furnish fresh meat to the despondent lions and tigers. I advised her to keep away from the tree. She said she wouldn't. I foresee trouble. Will emigrate.

WEDNESDAY.—I have had a variegated time. I escaped that night, and rode a horse all night as fast as he could go, hoping to get clear out of the Park and hide in some other country before the trouble should begin; but it was not to be. About an hour after sun-up,

as I was riding through a flowery plain where thousands of animals were grazing, slumbering, or playing with each other, according to their wont, all of a sudden they broke into a tempest of frightful noises, and in one moment the plain was a frantic commotion and every beast was destroying its neighbor. I knew what it meant—Eve had eaten that fruit, and death was come into the world. . . . The tigers ate my horse, paying no attention when I ordered them to desist, and they would have eaten me if I had stayed—which I didn't, but went away in much haste. . . . I found this place, outside the Park, and was fairly comfortable for a few days, but she has found me out. Found me out, and has named the place Tonawanda—says it *looks* like that. In fact I was not sorry she came, for there are but meagre pickings here, and she brought some of those apples. I was obliged to eat them, I was so hungry. It was against my principles, but I find that principles have no real force except when one is well fed. . . . She came curtained in boughs and bunches of leaves, and when I asked her what she meant by such nonsense, and snatched them away

and threw them down, she tittered and blushed. I had never seen a person titter and blush before, and to me it seemed unbecoming and idiotic. She said I would soon know how it was myself. This was correct. Hungry as I was, I laid down the apple half-eaten—certainly the best one I ever saw, considering the lateness of the season—and arrayed myself in the discarded boughs and branches, and then spoke to her with some severity and ordered her to go and get some more and not make such a spectacle of herself. She did it, and after this we crept down to where the wild-beast battle had been, and collected some skins, and I made her patch together a couple of suits proper for public occasions. They are uncomfortable, it is true, but stylish, and that is the main point about clothes. . . . I find she is a good deal of a companion. I see I should be lonesome and depressed without her, now that I have lost my property. Another thing, she says it is ordered that we work for our living hereafter. She will be useful. I will superintend.

TEN DAYS LATER.—She accuses *me* of being the cause of our disaster! She says, with ap-

parent sincerity and truth, that the Serpent assured her that the forbidden fruit was not apples, it was chestnuts. I said I was innocent, then, for I had not eaten any chestnuts. She said the Serpent informed her that "chestnut" was a figurative term meaning an aged and mouldy joke. I turned pale at that, for I have made many jokes to pass the weary time, and some of them could have been of that sort, though I had honestly supposed that they were new when I made them. She asked me if I had made one just at the time of the catastrophe. I was obliged to admit that I had made one to myself, though not aloud. It was this. I was thinking about the Falls, and I said to myself, "How wonderful it is to see that vast body of water tumble down there!" Then in an instant a bright thought flashed into my head, and I let it fly, saying, "It would be a deal more wonderful to see it tumble *up* there!"—and I was just about to kill myself with laughing at it when all nature broke loose in war and death and I had to flee for my life. "There," she said, with triumph, "that is just it; the Serpent mentioned that very jest, and called it the First Chestnut, and said it was

coeval with the creation." Alas, I am indeed to blame. Would that I were not witty; oh, that I had never had that radiant thought!

NEXT YEAR.—We have named it Cain. She caught it while I was up country trapping on the North Shore of the Erie; caught it in the timber a couple of miles from our dug-out—or it might have been four, she isn't certain which. It resembles us in some ways, and may be a relation. That is what she thinks, but this is an error, in my judgment. The difference in size warrants the conclusion that it is a different and new kind of animal—a fish, perhaps, though when I put it in the water to see, it sank, and she plunged in and snatched it out before there was opportunity for the experiment to determine the matter. I still think it is a fish, but she is indifferent about what it is, and will not let me have it to try. I do not understand this. The coming of the creature seems to have changed her whole nature and made her unreasonable about experiments. She thinks more of it than she does of any of the other animals, but is not able to explain why. Her mind is disordered—everything shows it. Sometimes she carries the fish in

Photograph by Orrin E. Dunlap.

THE HORSESHOE FALL AT SUNSET.

her arms half the night when it complains and wants to get to the water. At such times the water comes out of the places in her face that she looks out of, and she pats the fish on the back and makes soft sounds with her mouth to soothe it, and betrays sorrow and solicitude in a hundred ways. I have never seen her do like this with any other fish, and it troubles me greatly. She used to carry the young tigers around so, and play with them, before we lost our property, but it was only play; she never took on about them like this when their dinner disagreed with them.

SUNDAY.—She doesn't work, Sundays, but lies around all tired out, and likes to have the fish wallow over her; and she makes fool noises to amuse it, and pretends to chew its paws, and that makes it laugh. I have not seen a fish before that could laugh. This makes me doubt. . . . I have come to like Sunday myself. Superintending all the week tires a body so. There ought to be more Sundays. In the old days they were tough, but now they come handy.

WEDNESDAY.—It isn't a fish. I cannot quite make out what it is. It makes curious devil-

ish noises when not satisfied, and says "goo-goo" when it is. It is not one of us, for it doesn't walk; it is not a bird, for it doesn't fly; it is not a frog, for it doesn't hop; it is not a snake, for it doesn't crawl; I feel sure it is not a fish, though I cannot get a chance to find out whether it can swim or not. It merely lies around, and mostly on its back, with its feet up. I have not seen any other animal do that before. I said I believed it was an enigma; but she only admired the word without understanding it. In my judgment it is either an enigma or some kind of a bug. If it dies, I will take it apart and see what its arrangements are. I never had a thing perplex me so.

THREE MONTHS LATER.—The perplexity augments instead of diminishing. I sleep but little. It has ceased from lying around, and goes about on its four legs now. Yet it differs from the other four-legged animals, in that its front legs are unusually short, consequently this causes the main part of its person to stick up uncomfortably high in the air, and this is not attractive. It is built much as we are, but its method of travelling shows that it is not of our breed. The short front legs and long

hind ones indicate that it is of the kangaroo family, but it is a marked variation of the species, since the true kangaroo hops, whereas this one never does. Still it is a curious and interesting variety, and has not been catalogued before. As I discovered it, I have felt justified in securing the credit of the discovery by attaching my name to it, and hence have called it *Kangaroorum Adamiensis*. . . . It must have been a young one when it came, for it has grown exceedingly since. It must be five times as big, now, as it was then, and when discontented it is able to make from twenty-two to thirty-eight times the noise it made at first. Coercion does not modify this, but has the contrary effect. For this reason I discontinued the system. She reconciles it by persuasion, and by giving it things which she had previously told it she wouldn't give it. As already observed, I was not at home when it first came, and she told me she found it in the woods. It seems odd that it should be the only one, yet it must be so, for I have worn myself out these many weeks trying to find another one to add to my collection, and for this one to play with; for surely

then it would be quieter and we could tame it more easily. But I find none, nor any vestige of any; and, strangest of all, no tracks. It has to live on the ground, it cannot help itself; therefore, how does it get about without leaving a track? I have set a dozen traps, but they do no good. I catch all small animals except that one; animals that merely go into the trap out of curiosity, I think, to see what the milk is there for. They never drink it.

THREE MONTHS LATER.—The Kangaroo still continues to grow, which is very strange and perplexing. I never knew one to be so long getting its growth. It has fur on its head now; not like kangaroo fur, but exactly like our hair except that it is much finer and softer, and instead of being black is red. I am like to lose my mind over the capricious and harassing developments of this unclassifiable zoölogical freak. If I could catch another one—but that is hopeless; it is a new variety, and the only sample; this is plain. But I caught a true kangaroo and brought it in, thinking that this one, being lonesome, would rather have that for company than have no kin at all, or any animal it could feel a nearness to or get sym-

pathy from in its forlorn condition here among strangers who do not know its ways or habits, or what to do to make it feel that it is among friends; but it was a mistake—it went into such fits at the sight of the kangaroo that I was convinced it had never seen one before. I pity the poor noisy little animal, but there is nothing I can do to make it happy. If I could tame it—but that is out of the question; the more I try the worse I seem to make it. It grieves me to the heart to see it in its little storms of sorrow and passion. I wanted to let it go, but she wouldn't hear of it. That seemed cruel and not like her; and yet she may be right. It might be lonelier than ever; for since I cannot find another one, how could *it?*

FIVE MONTHS LATER.—It is not a kangaroo. No, for it supports itself by holding to her finger, and thus goes a few steps on its hind legs, and then falls down. It is probably some kind of a bear; and yet it has no tail—as yet—and no fur, except on its head. It still keeps on growing—that is a curious circumstance, for bears get their growth earlier than this. Bears are dangerous—since our catastrophe—and I shall not be satisfied to have

this one prowling about the place much longer without a muzzle on. I have offered to get her a kangaroo if she would let this one go, but it did no good—she is determined to run us into all sorts of foolish risks, I think. She was not like this before she lost her mind.

A Fortnight Later.—I examined its mouth. There is no danger yet; it has only one tooth. It has no tail yet. It makes more noise now than it ever did before—and mainly at night. I have moved out. But I shall go over, mornings, to breakfast, and see if it has more teeth. If it gets a mouthful of teeth it will be time for it to go, tail or no tail, for a bear does not need a tail in order to be dangerous.

Four Months Later.—I have been off hunting and fishing a month, up in the region that she calls Buffalo; I don't know why, unless it is because there are not any buffaloes there. Meantime the bear has learned to paddle around all by itself on its hind legs, and says "poppa" and "momma." It is certainly a new species. This resemblance to words may be purely accidental, of course, and may have no purpose or meaning; but even in that

case it is still extraordinary, and is a thing which no other bear can do. This imitation of speech, taken together with general absence of fur and entire absence of tail, sufficiently indicates that this is a new kind of bear. The further study of it will be exceedingly interesting. Meantime I will go off on a far expedition among the forests of the north and make an exhaustive search. There must certainly be another one somewhere, and this one will be less dangerous when it has company of its own species. I will go straightway; but I will muzzle this one first.

THREE MONTHS LATER.—It has been a weary, weary hunt, yet I have had no success. In the meantime, without stirring from the home estate, she has caught another one! I never saw such luck. I might have hunted these woods a hundred years, I never would have run across that thing.

NEXT DAY.—I have been comparing the new one with the old one, and it is perfectly plain that they are the same breed. I was going to stuff one of them for my collection, but she is prejudiced against it for some reason or other; so I have relinquished the idea,

though I think it is a mistake. It would be an irreparable loss to science if they should get away. The old one is tamer than it was, and can laugh and talk like the parrot, having learned this, no doubt, from being with the parrot so much, and having the imitative faculty in a highly developed degree. I shall be astonished if it turns out to be a new kind of parrot; and yet I ought not to be astonished, for it has already been everything else it could think of since those first days when it was a fish. The new one is as ugly now as the old one was at first; has the same sulphur-and-raw-meat complexion and the same singular head without any fur on it. She calls it Abel.

TEN YEARS LATER.—They are *boys;* we found it out long ago. It was their coming in that small, immature shape that puzzled us; we were not used to it. There are some girls now. Abel is a good boy, but if Cain had stayed a bear it would have improved him. After all these years, I see that I was mistaken about Eve in the beginning; it is better to live outside the Garden with her than inside it without her. At first I thought she talked too much; but now I should be sorry to have

that voice fall silent and pass out of my life. Blessed be the chestnut that brought us near together and taught me to know the goodness of her heart and the sweetness of her spirit!

NIAGARA, FIRST AND LAST.

By William D. Howells.

I.

In the spring of 1860 I wrote a life of Lincoln. It was what is called a campaign life, and in its poor way it was a part of the electioneering enginery of a canvass destined to be, if not the most memorable in our history, at least of the farthest effect. To be quite honest, I must own that my book, as I now look back on the facts, probably served the mysterious uses, and performed the vague offices of a fifth wheel to a coach, in forwarding the fortunes of the man whose life it celebrated before he was so famous as to need no blare of trumpets, not to say willow whistles, evermore. What seems strange is that the great renown of Lincoln has not reacted upon one of his earliest biographies; that this has dropped as

Photograph by Nielson.

THE WHIRLPOOL RAPIDS.

wholly in oblivion as if it was the story of nobody; the coach indeed arrived in glory, and was found to be the car of victory, the fiery chariot of freedom; but the fifth wheel seems to have stopped somewhere on the way.

My book was published in Columbus, O., and I did not wait for its assured success before setting forth upon some travels which had long invited me. The publisher had so much faith in it as to be willing to supply me in advance with a certain sum of money, say fifty dollars in Ohio money, and a letter of credit, addressed to several publishers in Boston and New York, to the amount of some hundred and ninety dollars more. I meant to explore those distant capitals, and to take in the wonders and delights of the St. Lawrence route to Quebec, and to acquaint myself with the manners and customs of strange peoples, so far as they were to be studied in Canada. For this journey, a great deal of money was needed, and I took all I had. I do not know why I should have thought it well to spend my whole substance upon this venture, but I seem to have done so; and I had no compunctions, so far as I can remember, in spending so much

of this vast sum in Ohio money, which I then believed the best money in the world. I found later that it was worth only eighty-five or ninety cents on the dollar in Boston; one was liable to these surprises in the days of State banking; but as yet I was troubled with no misgivings when I left Columbus, and took my way to Buffalo, where I thought I might fitly rest a day or two, and recruit my strength for the impression of Niagara which I was eager to receive. I spent most of this stay in my room at the hotel, writing letters for a Cincinnati paper, which had agreed to take them from me. The passion for summer correspondence has not yet died out of journalism, but even then I found its impulses uncertain, and many of the letters I wrote on that journey were never printed. I am not sure that this was a loss to literature; but it certainly was a loss to me in that Ohio money which was the best in the world. When I was not writing, I was wandering about the streets of Buffalo, and viewing its monuments from the platform of a horse car, or from its pavements, not so much crowded then as now. I forget what the monuments were in that day;

I even forget who were the editors of the papers, whom I visited after the simple journalistic usage of the time, and conversed with in their offices. But they probably had their revenge, and forgot who I was much sooner. I recall, however, that it was all very stirring and interesting, and that I tried to view the novelties I found everywhere in the manner of my favorite authors, and to describe them in their style. The chief of these authors was then Heinrich Heine, and I did my best to give such an account of Buffalo as he would have written in English if he had been there in my place. As soon as I had completed the history of my observations, which was more considerable than the observations themselves, I pushed on to Niagara Falls.

II.

One always experiences a vivid emotion from the sight of the Rapids, no matter how often one sees them, but I am safe in saying that one sees them for the first time but once. After that one has the feeling of a *habitué* towards them, a sort of friendly and familiar

appreciation of their terrific beauty, but certainly not the thrill of the pristine awe. It is even hard to recall that: the picture remains, but not the sense of their mighty march, or of their gigantic leaps and lunges, when they break ranks, and their procession becomes a mere onward tumult without form or order. I had schooled myself for great impressions, and I did not mean to lose one of them; they were all going into that correspondence which I was so proud to be writing, and finally, I hoped, they were going into literature: poems, sketches, studies, and I do not know what all. But I had not counted upon the Rapids taking me by the throat, as it were, and making my heart stop. I still think that above and below the Falls, the Rapids are the most striking features of the spectacle. At least you may say something about them, compare them to something; when you come to the Cataract itself, you can say nothing; it is incomparable. My sense of it first, and my sense of it last, was not a sense of the stupendous, but a sense of beauty, of serenity, of repose. I have always had to take myself in hand, to shake myself up, to look twice, and recur to what I have heard

and read of other people's impressions, before I am overpowered by it. Otherwise I am simply charmed.

I hurried out to look at it, and I spent the afternoon in taking a careful account of my impressions, and trying to fit phrases to my emotions for that blessed correspondence. Then I went back to my room and began to put them down on paper while they were still warm.

That pleasant room in the hotel is very vivid in my memory yet. It had a green lattice-door opening into the corridor, and when I left the inner door ajar, a delicious current of summer breeze and afternoon sunshine drew through it from the window looking out on a sweep of those Rapids. It was what they call a single room, but it seemed very spacious at that time, and it had a little table in it, where I wrote my letters to the Cincinnati paper. I lived two weeks in that room, and I made a vast deal of copy, including some poems, I believe, which never got printed, any more than most of my letters, though I did not confine the test of their merit to one editor alone.

III.

Apart from these literary enterprises of mine there was not a great deal to occupy me in the hotel. I suppose there are moments when the hotels at Niagara are full, but I never happened there at those moments, and my hotel at the time of the first visit was far from crowded, though it was in the days before the war when Southerners were reputed to visit the Falls in great numbers. We dined at midday to the music of a brass band, which must have been more than usually brazen, to have affected my nerves the way it did, for at twenty-three the nerves are not sensitive. Very likely there were a variety of brides and grooms there, but I did not know them from the rest: so little is one condition of life able to distinguish another. There was a period when these young couples were visible to me, afterwards; and then, when I was very much older, they vanished again, and were no more to be found by the eye of earlier age than by the eye of earlier youth. I believe I saw numbers of pretty young girls, who then appeared to me stately and mature women, of great splendor and beauty, and of varying measures

of haughty inapproachability. I made the acquaintance of no one in the hotel, but by a sort of affinition, which I should now be at a loss to account for, I fell in with two artists who were painting the Falls and the Rapids, and the scenery generally, and I used to go about with them, and watch them at their work. They were brothers, and very friendly fellows, not much older than I, and because I liked them, and was reaching out in every direction for the materials of greater and greater consciousness, I tried to see Niagara as actively and pervasively iridescent as they did. They invited me to criticise their pictures in the presence of the facts, and I did once intimate that I failed to find all those rainbows, of different sizes and shapes which they had represented on the surface of the water everywhere. Then they pointed the rainbows out with their forefingers and asked, Didn't I see them there, and there, and there? I looked very hard, and as I was not going to be outdone in the perception of beauty, I said that I did see them, and I tried to believe that I saw them, but, Heaven knows, I never did. I hope this fraud will not be finally accounted against

me. Those were charming fellows, and other pictures of theirs I have found so faithful that I am still a little shaken about the rainbows. My artists were from Ohio, and though I was too ignorant then to affirm that Ohio art was the best art in the world, just as Ohio money was the best, still I was very proud of it, and I suppose I renowned those invisible iridescences in my letter to the Cincinnati paper.

We walked all about the Falls, and over Goat Island, and to and from the Whirlpool, and it was a great advantage to me to be in the artists' company, for they knew all the loveliest places, and could show me the best points of view. I drove nowhere, because I had a fear, bred of much newspaper rumor and humor, that my accumulated treasures would not hold out against the rapacity of a single Niagara hackman. A dollar was a dollar in those days, especially if it were a dollar of Ohio money, or at least it was so till you got to Boston; and I was not willing to waste any of mine in carriage fares. But to be honest about those poor fellows, I always found the Niagara hackmen, when I visited their domain in after years, not only civil but reasonable, and I have

Photograph by Curtis.

LUNA ISLAND IN WINTER.

never regretted the money I spent upon them; it was no longer Ohio money, to be sure.

Some places I could not walk to on that first visit, and as there was no suspension bridge then near the Falls, I took a boat when I wished to cross to the Canada side, and a man rowed me over the eddies of the river where they reeled away from the plunge of the Cataract. I do not think I crossed more than once, or had any wish to do so, after I had visited the battlefield of Lundy's Lane, where a veteran of the fight, so well preserved in alcohol that I should not be surprised if he were there yet, gave me an account of it from the top of a tower in which he seemed to be fortified. That poor little carnage has shrunken into so small a horror since the battles of the great war, then impending, that I feel somewhat like excusing the mention of it now; but when I visited the scene in 1860, I was aware of several emotions which, if not of prime importance on the spot, were very capable of being worked up into something worth while in my letter to the Cincinnati paper. I tried to give them a Heinesque cast, and I made a good deal of the tipsy veteran. In the course of a literary

life one is obliged to practise these economies, and I advise the beginner in our art against throwing away anything whatever. But what is the need of advising him? He would not be able to do so if he wished. He belongs to what he has seen, as much as it belongs to him, and he owes it a debt of expression which will weigh upon him till he complies with its just demand. The trouble is with what he has not seen, and decidedly he had better not be advised against throwing that away. The more of that he throws away the better; and the reader can have very little notion how much he is profiting by my profusion in this respect.

IV.

Really, however, I did see a great many things at Niagara on that first visit, and I am sorry to say that I saw them chiefly on the Canada side. My patriotism has always felt the hurt of the fact that our great national cataract is best viewed from a foreign shore. There can be no denying, at least in a confidence like the present, that the Canadian Fall, if not more majestic, is certainly more massive,

than the American. I used to watch its mighty wall of waters with a jealousy almost as green as themselves, and then try to believe that the knotted tumble of our Fall was finer. I could only make out that it had more apparent movement. But at times, and if one looked steadily at any part of the Cataract, the descending floods seemed to hang in arrest above the gulfs below. Those liquid steeps, those precipices of molten emerald, all broken and fissured with opal and crystal, seemed like heights of sure and firmset earth, and the mists that climbed them half-way were as still to the eye in their subtler sort. This effect of immobility is what gives its supreme beauty to Niagara, its repose. If there is agony there, it is the agony of Niobe, of the Laocoön. It moves the beholder, but itself it does not move.

I spent a great deal of time trying to say this or something like it, which now and always seemed to me true of Niagara, though I do not insist that it shall seem so to others. I could not see those iridescences that everywhere illumined the waters to my artist friends, and very likely the reader, if he is a person of feeble fancy, small sympathy, and

indifferent morals, will find nothing of this Repose that I speak of in Niagara. I imagine him taking my page out into the presence of the fact, and demanding, Now where is the Repose?

Well, all that I can say is that it has always been there on the occasion of my visits. On the occasion of my first visit there was even a shelf of the Table Rock still there, and I went out and stood upon it, for the sake of saying that I had done so in my letter to the Cincinnati paper, though I might very well have said it without having done so, and I am almost sorry that I did not, when I remember how few of those letters that paper printed. There was no great pleasure in the experience. You were supposed to get a particularly fine view of the Horse Shoe Falls, but I got no view at all, on account of a whim of the mist. Weeks earlier a large piece of the rock had fallen just a few moments after a carriage full of people had driven off it, and I did not know but another piece might fall just a few moments before I walked off it. I was not in a carriage, and my portion of Table Rock did not fall till some three months later; that was quite soon

enough for me; I should have preferred three years.

I do not know whether it was my satisfaction in this hair-breadth escape or not, but I had sufficient spirits immediately after to join a group of people near by who were taking peeps over a precipice at something below. I did not know what it was, but I thought it might be something I could work up in my letters to that Cincinnati paper, and I waited my turn among those who were lying successively on their stomachs and craning their necks over the edge; and then I saw that it was a man who was lying face upwards on the rocks below, and had perhaps been lying there some time. He was a very green and yellow melancholy of a man, as to his face, and in his workman's blue overalls he had a trick of swimming upwards to the eye of the æsthetic spectator, so that one had to push back with a hard clutch on the turf to keep from plunging over to meet him. I made a note of this morbid impulse for primary use in my letters to that Cincinnati paper, and secondary use in a poem, or sketch, or tale; and then I crawled back and went away, and was faint in secret

for a while. It was strange how fully sufficing one little glimpse of that poor man was. No one knew who he was or how he had fallen over there, but after the first glance at him (I believe I did not give a second) I felt that we did not part strangers. Now I meet people at dinner and pass whole evenings with them, and cannot remember their faces so as to place them the next week. But I think I could have placed that poor man years afterwards. To be sure the circumstances are different, and I am no longer twenty-three.

V.

Do they still, I wonder, take people to see a place not far above the Canadian Fall, where a vein of natural gas vents itself amid the trouble of the waters, and the custodian sets fire to it with a piece of lighted newspaper? They used to do that, if you paid them a quarter, in a little pavilion built over the place to shut out the unpaying public. By comparison with the great gas wells which I saw in combustion long after at Findlay, this was a very feeble rush light conflagration indeed, but it had the

merit of being much more mysterious. I, for instance, did not know it was natural gas, or what it was, and the custodian sagely would not say; the mystery was probably part of his stock in trade. There were many mysteries, maintained at a profit, about Niagara then, and not the least of them was Terrapin Tower, which stood at the brink of the American Fall, and was reached by a series of stepping stones and bridges amidst the rapids. The mystery of this was that any human being should wish to go up it, at the risk of his life, but everybody did. I myself found a bridal couple (of the third espousals) in it when I ventured a vast deal of potential literature in its frail keeping; no terrapin, I fancy, was ever so rash as to ascend it, from the day it was built to the day it was taken away. What is so amusing now to think of, though not so amusing then, is that all the while I was clambering about those heights and brinks, I was suffering from an inveterate vertigo, which made plain ground rather difficult for me at times. At odd moments it became necessary for me to lay hold of something and stay the reeling world; and the recurrence of these exigencies

finally decided me against venturing into the Cave of the Winds. Upon the whole I am glad I did not penetrate it, for now I can think it what I like, and if I had seen it I probably could not do that. I compromised by descending the Biddle Stairs, which had a rail to hold on by, and which, I have no doubt, amount to much the same thing as the Cave of the Winds. At any rate, when I got to the bottom of them, I wondered why in the world I had come down.

I do not know whether under the present socialistic régime, or state control, of the Falls, there are so many marvels shown as under the old system of private enterprise. But I am sure that their number could have been greatly reduced, with advantage to the visitor. If you find a marvel advertised, and you learn that you cannot see it without paying a quarter, every coin upon your person begins to burn in an intense sympathy with your curiosity, and you cannot be content till you have seen that marvel. This was the principle of human nature upon which private capital had counted, and it did not matter that the Falls themselves were enough to glut the utmost greed of won-

der. Their prodigious character was eked out by every factitious device to which the penalty of twenty-five cents could be attached. I remember that at the entrance of Prospect Park, if not within the sacred grove, a hardy adventurer had pitched his tent and announced the presence of a five-legged calf within its canvas walls, in active competition with the great Cataract. I paid my quarter (my Ohio money was all paper, or I might have thought twice about it) in order to make sure that this calf was in no wise comparable to Niagara. I do not say that the picture of the calf on the outside of the tent was not as good as some pictures of Niagara that I have seen. It was at least as much like.

I hope that all this is not decrying the attractions of any worthy adjunct of the Cataract, such as the Whirlpool. There is of course no other such, and I was proud and glad to believe that the Whirlpool was chiefly on the American side, or the first part of it, or was at first nearly if not solely accessible from our territory; and I did not find out till long after that I was wrong. The Whirlpool, seen from the heights around it, has that effect of sculp-

turesque repose which I have always found the finest thing in the Cataract itself. Like that it is impassioned, while the Rapids are passionate. From the top the circling lines of the Whirlpool seemed graven in a level of chalcedony; the illusion of arrest was so perfect that I was almost sorry ever to have lost it, though I do not know what I could have done with it if I had kept it. I duly studied my phrases about it for my letters to that Cincinnati paper, and it is probably from some of them, printed or unprinted, that I speak now. These things linger long in the mind; and it is not always from frugality that the observer of the picturesque uses the same terms again and again. Happily, I am not obliged to describe the Whirlpool to the reader, as I was then, and I have no impression to impart except this sense of its worthy unity with the Cataract in what I may call its highest æsthetic quality, its repose.

VI.

If the reader does not believe in this, he may go and look; but there is one fact of this first visit of mine to Niagara which he must help-

THE "MAID OF THE MIST."

Photograph by Zybach.

lessly take my word for. That fact is Blondin, who is closely allied in my mind with the Whirlpool, because I saw him cross the river above the frantic Rapids not far from it. If this association is too mechanical, too material, then I will go farther, and say that when Blondin had got such a distance into the danger, he, too, became an illusion of Repose; and I defy the most sceptical reader, who was not then present, to gainsay me.

Why those rapids just below the large Suspension Bridge were chosen to stretch Blondin's cable over, I do not know, unless it was because the river narrows to a gorge there, and because those rapids are more horrid, in the eighteenth-century sense, than any other feature of Niagara. They have been a great deal exploited since Blondin's time by adventurers who have attempted to swim them, and to navigate them in barrels and buoys and India-rubber balls, or if not quite India-rubber balls, I do not know why. But at that time no craft but the Maid of the Mist, the little steamboat which used to run up to the foot of the cataract, had ever dared them. She, indeed, flying from the perennial pun involved in her

name, not to mention the sheriff's officer who had an attachment for her, weathered the rapids and passed in and out of the Whirlpool, and escaped into the quiet of Canadian waters, with the pilot and her engineer on board. Afterwards I saw her at Quebec, where she had changed her name, as other American refugees in Canada have done, and had now become the Maid of Orleans, in recognition of her peaceful employ of carrying people to and from the Isle of Orleans. But her adventurous voyage was still fresh on the lips of guides and hackmen when I was first at Niagara, and I looked at the Rapids and the Whirlpool with an interest peculiarly fearful because of it.

As usual, I walked to the scene of the exploit I was about to witness, but there were a good many people walking, and they debated on the way whether Blondin would cross that day or not. It had been raining over night, and some said his cable was not in condition; others, that the guys which stayed it on either side were too slack, or too taut from the wet. Nevertheless, we found a great crowd on the Canada shore, which seemed to command the best view of Blondin as well as of Niagara, and

the American shore was dense with spectators, too. As the hour drew near for Blondin to do his feat, we were lost in greater and greater doubt whether he would do it or not, and perhaps if a vote had been taken the sceptics would have carried the day, when he suddenly danced out upon the cable before our unbelieving eyes.

The dizzy path was of the bigness of a ship's cable, at the shore, but it seemed to dwindle to a thread where it sank over the centre of the gulf, down toward those tusked and frothing breakers. They seemed to jump at it, like a pack of maddened wolves, and to pull one another back, and then to tumble and flow away, forever different, forever the same. The strong guys starting from the rocks of the precipice and the level of the rapids could stay it, after all, only a little part of its length, and beneath them and up through them, the black cedars thrust their speary tops, with that slant toward the middle of the gorge, which must be from the pull of the strong draft between its walls. They made a fine contrast of color with the floods breaking snowy white from their bulks of glassy green; and for the rest

there was the perfect blue of the summer heaven over all.

There was no testing of the guys, whether they were slack or taut, or of the cable, whether it was in condition, and in fact no one thought of either, such was the surprise of seeing that pink figure of a man spring out into space from some source which I, at least, had not observed. He was in the conventional silk fleshings of the rope-dancer, and he carried a very long balancing pole. At first there was some reality in the apparition. One felt he was a fellow-man about to dare death for our amusement, but as he began to run down the slope of the cable toward the centre, one rapidly lost this sense, and beheld him as a mere feature of the general prospect. Perhaps he was aware of this effect and chose to startle us back to our consciousness of his humanity, or perhaps it was a wonted trick, intended to heighten the interest of the spectacle. At any rate, in the very middle of the river, he seemed suddenly to falter, and he swayed from side to side as if he were going to fall. A sort of groan went through the crowd, and several women fainted. Then

Blondin made believe to recover himself, and began to climb the slope of his cable to the further shore. I do not know just how far this was, but I think it may have been well on to half a mile; as to the height above the rapids where the cable hung it looked like a hundred and fifty feet. I made some vague notes of these matters after Blondin vanished into the crowd beyond, but there was not much time for conjecture. He came into sight again almost at once, a little puppet, running down the farther slope of the cable, and growing a little and a little larger as he drew near. Presently one noticed that he had left his balancing pole behind, and was tripping forward with outstretched arms.

I stood where I could see him well, on his return, and I looked at him with something of the interest one might feel in a man who had come back from the dead and had put on his earthly personality again. I do not remember his face, which was no doubt as good or as bad a face as any mountebank's or monarch's, but his feet seemed to me the very most intelligent feet in the world, pliable, sinuous, clinging, educated in every fibre, and full of

spiritual sentience. They had the air of knowing that the whole man was trusted to them, and, such as he was, that he was in their power and keeping along. They rose and fell upon the cable with an exquisite accuracy, and a delicate confidence which had nothing foolhardy in it. Blondin's head might take risks, but it was clear that Blondin's feet took none; whatever they did they did wittingly, and with a full forecast of the chances and consequences. They were imaginably such feet as Isaac Taylor conjectures we may have in another life, where the intellect shall not be seated in the brain alone, but shall be issued to every part of the body, and present in every joint and limb.

They were an immense consolation to me, those feet, and when Blondin went tripping gayly out upon them over his rope again, I breathed much more freely than I had before; they had, as it were, personally reassured me, and given me their honor that nothing should happen to him; those feet and I had a sort of common understanding about him, and I do not think they respected him any more than I did for risking his life in that manner. He went down the rope and up the rope, dwin-

dling from a pink man to a pink puppet as before, and going to nothing in the crowd. Then he came to something once more, and began to grow from a puppet into a man again, but with something odd about him. He had resumed his balancing pole, and he had something strange on his feet, those wise feet, and, as he drew nearer, we could see that he had wooden buckets on them, of about the bigness of butter firkins; I tell it, not expecting much to be believed, for I did not believe it when I saw it. But till he arrived, I could say to myself that there were no bottoms in those buckets, and that his sagacious feet, though somewhat impeded, had still no doubt a good chance to save him, if he lost his head, and would be equal to any common emergency. That was the opinion of everyone about me, and though I knew how vexed with him the feet must be, I did not wholly lose patience till I was told by one who saw the buckets after Blondin stepped out of them, that they had wooden bottoms like any other butter firkins. Then I was glad that I did not see his feet again, for I could imagine the look of cold disgust, the look of haughty injury they must

wear at having been made privy to such a mere brutal audacity.

The man himself looked cool and fresh enough, but I, who was not used to such violent fatigues as he must have undergone in these three transits, was bathed in a cold perspiration, and so weak and worn with making them in sympathy that I could scarcely walk away.

Long afterwards I was telling about this experience of mine—it was really more mine than Blondin's—in the neat shop of a Venetian pharmacist, to a select circle of the physicians who wait in such places in Venice for the call of their patients. One of these civilized men, for all comment, asked: "Where was the government?" and I answered in my barbarous pride of our individualism, "The government had nothing to do with it. In America the government has nothing to do with such things."

But now I think that this Venetian was right, and that such a show as I have tried to describe ought no more to have been permitted than the fight of a man with a wild beast. It was an offence to morality, and it

thinned the frail barrier which the aspiration of centuries has slowly erected between humanity and savagery. But for the time being I made no such reflections. I got back to my hotel and hastened to send off a whole letter about Blondin to that Cincinnati paper; and to this day I do not know whether they ever printed it or not. I try to make fun of it now, but it was not funny then. All the way round on that tour, my view of the wonders of nature and the monuments of man was obscured by my anxiety concerning the letters I wrote to that Cincinnati paper; and at all the hotels where I stopped I hurried to examine the files of the reading-room and see whether it had kept faith with me or not. Across many years, across graves not a few, I can reach and recall the hurt vanity, the just resentment, and the baffled hope that were bound up in that early experience of editorial frailty.

VII.

My first visit to Niagara was paid in the midsummer of the year, and the midsummer of my life. All nature was rich and beautifully

alive amid scenes which I think are of her noblest. There were places where the fresh scent of the waters was mixed with the fragrance of wild flowers; the birds which sang inaudibly in the immediate roar of the Cataract made themselves sweetly heard in the heart of Goat Island. Everywhere there were pretty young girls, in the hats which they were then beginning to wear after a long régime of bonnets, and their hats had black plumes in them that drooped down as near to the cheeks of the pretty young girls as they could get.

I can scarcely help heaving a sigh for the wrinkles in those cheeks which the plumes, if they still drooped instead of sticking militantly up on the front and back of the hats, would not be so eager to caress now; but I will not insist a great deal upon a sort of sigh which has been often known in print already. I think it much more profitable to note that all the *entourage* of Niagara was then private property, and was put to those money-making uses at the expense of the public which form one of the holiest attributes of that sacred thing. I never greatly objected to the paper-mills on Goat Island; they were impertinent

to the scenery, of course, but they were picturesque, with their low-lying, weather-worn masses in the shelter of the forest trees, beside the brawling waters. But nearly every other assertion of private rights in the landscape was an outrage to it. I will not even try to recall the stupid and squalid contrivances which defaced it at every point, and extorted a coin from the insulted traveller at every turn. They are all gone now, and in the keeping of the State the whole redeemed and disenthralled vicinity of Niagara is an object lesson in what public ownership, whenever it comes, does for beauty.

I had the eagerness of a true believer to see this result, and even before I went to look at the cataract on my last visit a winter ago, I drove about and made sure from the liberated landscape that the people were in possession of their own. It was wonderful, even in midwinter, the difference in dignity and prosperity that not so much appeared as seemed to reappear, and to find in the beholder's consciousness a sense of what that divine prospect must have been when the eye of the white man first gazed upon it. The landscape had got back

something of its youth, and in my joy in it I got back something of mine.

I do not say that I got much. At fifty, one is at least not twice as young as at twenty-five. But I was very fairly young again when I came to Niagara in the midwinter of my midwinter year, and I was certainly as impatient as I could have been a quarter of a century earlier to see the ice-bridge below the Falls and the ice-cone that their breath had formed; in fact, I had waited a good deal longer to see them. Shall I own that at first sight these were a disappointment? At first sight the Falls themselves are a disappointment, for we come to them with something other than the image of their grand and simple adequacy in our minds, and seek to match them with that distempered invention of the ignorant fancy. I had supposed the ice-cone was a sharp peak, jutting up in front of the Cataract, not reflecting that it must be what it always is, a rounded knoll, built up finely, finely, slowly, slowly, out of the spectral shapes of mist, seized by the frost and flung down upon the frozen river. When you remember that this ice-cone is formed of the innumerable falls of these ghosts,

THE BREAKING OF THE ICE BRIDGE.

Photographs by H. Wilson Saunders.

THE ICE BRIDGE.

I think one ought to be content with the Romanesque dome-shape of the mound, however Gothic one's expectation may have been. I do not deny that I should still prefer the pinnacle, but that is because I prefer Gothic architecture; and I advise the reader not to hope for it. If he has a pleasure in delicate decoration, the closely stippled slopes of the ice-cone will give it to him; it is like that fine jeweller's work on the grain of dead gold where the whole surface is fretted with infinitesimal points. When these catch the sun of such a blue midwinter sky as lifted its speckless arch above the ice-cone on the day I saw it, the effect is all that one has a right to ask of mere nature. I am trying to hint that I would have built the ice-cone somewhat differently, if it had been left to me, but that I am not hypercritical. If it seems a little low, a little lumpish in the retrospect, still it has its great qualities, which I should be the last in refusing to recognize.

The name ice-bridge had deceived me, but the ice-bridge did not finally disappoint me. It is not a bridge at all. It is the channel of the river blocked as far as the eye can see down the gorge with huge squares and oblongs of

ice, or of frozen snow, as they seem, and giving a realizing effect to all the remembered pictures of arctic scenery. This was curiously heightened by some people with sleds among the crowds, making their way through the ice pack from shore to shore; there wanted only the fierce dash of some Esquimaux dog-team and the impression would have been perfect. It was best to look down upon it all from the cliffs, when at times the effect was more than arctic, when it was lunar: you could fancy yourself gazing upon the face of a dead world, or rather a plaster mask of it, with these small black figures of people crawling over it like flies. It was perfectly still that day, and in spite of the diapason of the Falls, an inner silence possessed the air. From the cliffs along the river the cedars thrust outward, armored in plates of ice, like the immemorial effigies of old-time warriors, and every cascade that had flung its bannerol of mist to the summer air, was now furled to the face of the rock and frozen fast. Again a sense of the repose, which is the secret of Niagara's charm, filled me.

There was repose even in the peculiar traffic of Niagara when we penetrated to a shop de-

voted to the sale of its bric-à-brac for some photographs of the winter scenery, and we fancied a weird surprise and a certain statuesque reluctance in the dealer. But this may have been merely our fancy. I would insist only upon the mute immobility of the birds on the feather fans behind the glazed shelves, and a mystical remoteness in the Japanese objects mingled with the fabrics of our own Indians and the imported feldspar cups and vases.

Our train went back to Buffalo through the early winter sunset, crimson and crimsoner over the rapids, and then purple over the ice where the river began to be frozen again. This color was so intense that the particles of ice along the brink were like a wilding growth of violets—those candied violets you see at the confectioner's.

AS IT RUSHES BY.

By E. S. Martin.

The great Northwest has two ways of reaching tide-water. It filters down the Mississippi, losing impetus as it goes southward, until, too much enervated to dig itself a channel, it rolls sluggishly on between artificial levees and slips unobtrusively into the Gulf by a dozen different passages. The farther south it goes the more irresponsible it becomes and the more need it has of assistance. To get it safely emptied is a constant care, calling for perpetual labor and Congressional appropriations. At the least neglect it slops lazily over, and settles down on the surrounding country.

How differently it comes East, navigating the great western lakes one after another, and finally crowding impetuously into the Niagara River and over its precipice with a roar and a jarring crash, and then out through Ontario and the swift St. Lawrence to the Ocean!

Journeying southward it blends imperceptibly with the region it traverses, so that it is hard to say where the West leaves off and the South begins. But it drops down upon the East with an enormous plunge that leaves no doubt of the whereabouts of the line of demarcation. Beyond Niagara is the West. Here the East begins, equal to the West in energy and vim, but different. The West never merges with the East as it does with the South. It comes to Niagara in overwhelming force and thunders at its gates, and then rolls off northeasterly and out through the British provinces. It asks nothing of man except to be let alone. It has dug its own channel with its own tools, and formed itself a basin of ample size to hold it. It is responsible, self-reliant, fully able to take care of itself, and ever ready to do any odd jobs that offer as it surges along. It seems to gather energy from the invigorating influences that meet it in its progress.

Colonel Ingersoll came to Niagara one day and looked at the tribute of the great Northwest as it surged by, and said: "Niagara Falls is a dangerous place."

There was disparagement in the Colonel's

tone, and disparagement is something to which Niagara is not much used. Whatever native it was that heard him stared and asked: "Do you mean the hackmen?"

"No!" said the eminent orator. "I mean those great rushing waters. There is nothing attractive to me in them. They are really dangerous. There is so much noise; so much tumult. It is simply a mighty force of nature, one of those tremendous powers which is to be feared for its danger."

The native's eyebrows went up at that. It is true enough that the Niagara River is not one that a cautious person would care to navigate, particularly above the Falls, but the Colonel, though not anchored to anything, was at least on firm land. The reflection suggested itself, that he had imperfectly diagnosed his own sensations, and that his dissatisfaction, which was obviously genuine, really sprung from the traditional disagreement of two of a trade. How could an orator be edified by a tone besides which his own best utterance was but a squeak? To make impressions is the orator's business, not to receive them. But at Niagara, Nature does the talking and has her

say out, and man's part is to listen and to digest. It was a high compliment that the great talker paid to the river by his instinctive disapproval, and perfectly consistent with his point of view were his continuing remarks:

"What I like in Nature is a cultivated field where men can work in the free, open air; where there is quiet and repose, not turmoil, strife, tumult, fearful roar, or struggle for mastery. I do not like the crowded, stuffy workshop where life is a slavery and drudgery, where men are slaves. Give me the calm, cultivated land of waving grain, of flowers, of happiness."

So spoke the man of superabundant energy, not unnaturally perferring scenes that seem to require some stirring up to those where all the requisite agitation comes ready furnished to hand. It is true that to the professional regulator, Niagara bristles with discouragement. There is comparatively little left there for man to do. To keep his hands off and let Nature take her course is the chief boon that is asked of him. But it is about the last place in the world to be compared to a stuffy workshop where men are slaves. Indeed, the very pith

of its contrast to the "cultivated land of waving grain" lies in the absence here of conspicuous signs of human labor. Work was traditionally imposed upon man for his sins. Even if the natural man is not rightfully lazy, he is at least entitled to love leisure, and prefer the minimum of toil. Surely Niagara is fit to refresh his jaded spirit. If he sighs at the foot of the Pyramids to think of the vast industry that was the cost of their construction, he is conversely entitled to exult at the resistless might of the Niagara River emptying its floods into its self-chiselled gorge. Only the planets wandering in their courses, harnessed to the sun, are so fit to stir an exultation of repose. Laborious man sits on our river's brink and meditates on the great spectacle of labor saved. The Falls must go themselves. Within the memory of man it has never been found needful even in the dryest times to operate them by artificial means. In sight or out of sight there is no apparatus for pumping water back into Lake Erie to keep the Cataract going. Neither has it ever been found necessary to dam the lake to keep the water from running out, nor to bail it out to keep it from run-

Photograph by Nielson.

THE CAVE OF THE WINDS IN WINTER.

ning over. Nature has done everything. The lake is always full, the river never ceases to drain it. The precipice that the torrent goes over is not absolutely permanent or changeless, but like the rest of the apparatus it takes care of itself, asking nothing of man but to stand from under when its features shift.

The great lesson of Niagara is to maintain a respectful attitude towards Nature. She is irresistible; not to be thwarted, not to be turned aside. It is our affair to study her courses, to get out of her way when she wants the whole road, and to make her do our work by the simple expedient of making our desires consistent with her methods.

In this feature of the Falls lie their special adaptation to be gazed upon by young persons who have just entered the married state and assumed the more serious burdens of life. It is not accident that brings the newly married to Niagara. It is instinct. It is good for them to be here, and some subtle influence has taught them to know it. Seeking for entertainment not to be laboriously won, but of a sort that stimulates the faculties while it pro-

motes reflection, they find it here. The river entertains them. It speaks to them in continuous discourse without exacting any reply. It distracts their attention gently from one another, which is a kindness, and when they speak together it prevents alien ears from overhearing what they say. It is uniformly kind to them—so long as they hug the bank—and then it gives them so many useful points for the shaping of their future destinies! It teaches them to let things slide when opposition will do no good. It stands to them for the resistless stream of life which sweeps us all over its falls first or last, so that it pays us to float tranquilly while we may and not mar so brief a passage with altercation. The individuality of so impetuous a flood can hardly fail to make its impression on them, suggesting that every individuality, even that of a married woman, has a right to its own development, and comes swifter and safer to a tranquil haven if left reasonably free to follow out its natural course.

But only dense men bully their wives anyway, and possibly such men are too impervious to instruction to gather the wisdom of Niagara

as it rushes by. But its wisdom is always there for those who can seize it, and for all coming time its banks promise to be trod by men and women who have need at least to try.

FAMOUS VISITORS AT NIAGARA FALLS

By Rev. Thomas R. Slicer.

The earliest description in literature of the Falls of Niagara was made by the priest and historian Father Hennepin, the associate of the explorer La Salle, who built, in 1679, the Griffin, to which appertains the honor of being the first vessel to sail the Great Lakes.

The narrative is entitled "A description of the Fall of the River Niagara which is to be seen between the Lake Ontario and that of Erie."

We give the commonly accepted version.

"Between the Lake Ontario and Erie, there is a vast and prodigious Cadence of Water, which falls down after a surprising and astonishing manner, insomuch that the Universe does not afford its parallel. 'Tis true, Italy and Sweetland boast of some such things, but

we may well say they are but sorry patterns, when compared to this of which we now speak. At the foot of this horrible Precipice, we meet with the River Niagara, which is not above a quarter of a league broad, but is wonderfully deep in some places. It is so rapid above this Descent, that it violently hurries down the wild beasts while endeavoring to pass it to feed on the other side, they not being able to withstand the force of its Current which inevitably casts them headlong above six hundred feet high.

"This wonderful Downfall is compounded of two cross-streams of Water, and two Falls, with an isle sloping along the middle of it. The waters which fall from this horrible Precipice do foam and boyl after the most hideous manner imaginable, making an outrageous noise, more terrible than that of Thunder; for when the wind blows out of the South, their dismal roaring may be heard more than Fifteen Leagues off.

"The River Niagara having thrown itself down this incredible Precipice, continues its impetuous course for Two Leagues together, to the great Rock above mentioned, with inex-

pressible rapidity. But having passed that, its impetuosity relents, gliding along more gently for the other Two Leagues, till it arrives at the Lake Ontario or Frontenac.

" Any Bark or greater Vessel may pass from the Fort to the foot of this huge Rock above mentioned. This Rock lies to the Westward, and is cut off from the Land by the River Niagara about Two Leagues farther down than the great Fall, for which Two Leagues the people are obliged to transport their goods overland; but the way is very good, and the Trees are very few, chiefly Firs and Oakes.

" From the great Fall unto this Rock, which is to the West of the River, the two brinks of it are so prodigious high, that it would make one tremble to look steadily upon the water, rolling along with a rapidity not to be imagined. Were it not for this vast Cataract, which interrupts Navigation, they might sail with Barks or greater Vessels, more than Four Hundred and Fifty Leagues, crossing the Lake of Hurons, and reaching even to the farther end of the Lake of Illinois, which two Lakes we may easily say are little Seas of fresh Water."

There are other accounts by Tonti, Hontan, and other early voyagers, but they are not especially to the purpose of this recital.

At the beginning of the present century, there limped, with an ankle sprained, to the shores of Lake Erie, from the borders of the forest, a young Englishman, whose tastes and conceit were in strong contrast to the primitive simplicity of the scene on which he entered.

Perhaps no greater tribute has ever been paid to the charm of the Falls of Niagara than is suggested by the fact that they reconciled the mind of Tom Moore to the disgusting experiences of travel in America, where, to his thinking, the promiscuous huddling together of all sorts of people in the stage-coaches was a symbol of the mixed character of a Republican Government. A man who had been petted by an indulgent family and flattered by a social circle, which sang his songs and laughed at his wit, found the unsettled society of the New World not easy to adjust to his fastidious taste; he had done us the honor to look over our country, and had served it up in his letters as "an interesting world, which with all the defects and disgusting peculiarities of its na-

tives, gives every promise of no very distant competition with the first powers of the Eastern hemisphere."

When the valleys of the Mohawk and the Genesee had been traversed, Moore was so much touched by their natural beauty that he exclaims: "Such scenery as there is around me! it is quite dreadful that any heart, born for sublimities, should be doomed to breathe away its hours amidst the miniature productions of this world, without seeing what shapes nature *can* assume, what wonders God *can* give birth to."

But he had not yet seen the Falls. He is about to start upon his journey to the Falls of Niagara in a wagon. On July 22d he sends back by the driver of the wagon a letter to be forwarded to his mother, written from upper Chippewa: "Just arrived within a mile and a half of the Falls of Niagara, and their tremendous roar at this moment sounding in my ears." Two days later he writes: "I have seen the Falls, and am all rapture and amazement. . . . Arrived at Chippewa within three miles of the Falls to dinner Saturday, July 21st. That evening walked toward the Falls,

but got no further than the Rapids, which gave us a prelibation of the grandeur we had to expect.

"Next day, Sunday, July 22d, went to visit the Falls. Never shall I forget the impressions I felt at the first glimpse of them which we got as the carriage passed over the hill that overlooks them. We were not near enough to be agitated by the terrific effects of the scene, but saw through the trees this mighty flow of waters descending with calm magnificence, and received enough of its grandeur to set imagination on the wing; imagination which even at Niagara can outrun reality.

"I felt as if approaching the very residence of the Deity; the tears started into my eyes; and I remained for moments after we had lost sight of the scene, in that delicious absorption which pious enthusiasm alone can produce. We arrived at the New Ladder and descended to the bottom. Here all its awful sublimities rushed full upon me. But the former exquisite sensation was gone. I now saw all. The string that had been touched by the first impulse, and which fancy would have kept forever in vibration, now rested at Reality. Yet

though there was no more to imagine, there was much to feel. My whole heart and soul ascended toward the Divinity in a swell of devout admiration, which I never before experienced. . . . Oh! bring the Atheist here, and he cannot return an Atheist!"

The chief value of these attempts at description is not that they describe or fail to describe this natural phenomenon, but that they do describe the mind of the beholder; for it is ever a fact that when a great subject is dealt with by the human mind we get a double lesson; if the mind be competent we get a description of the subject, but in any event we get a portrait of the mind. In no instance does this more appear than in the contrasting way in which Niagara claimed the attention of three noted women: Mrs. Jameson, Harriet Martineau, and Margaret Fuller. One would suppose that Mrs. Jameson's sense of beauty in art would have prepared her mind for at least an esctasy; or was it that her mind, already winged for the flights of imagination, and used to dealing with art-forms in the galleries of Europe, did not find it easy to place itself *en rapport*

Photograph by Curtis.

MOONLIGHT.

with a canvas so large as that on which the beauties of Niagara are painted by an unseen hand, in colors which are never two moments alike. Whatever may be the psychological reason, it is necessary to relate that Mrs. Jameson *would rather not have seen Niagara.* It was in 1837 that her visit was made to the Falls in the last part of January of that year. When she had stood face to face with them she exclaims: "Well, I have seen these cataracts of Niagara which have thundered in my mind's ear ever since I can remember—which have been my childhood's thought, my youth's desire, since first my imagination was awakened to wonder and to wish. I have beheld them, and shall I whisper it to you—but, O tell it not among the Philistines—I wish I had not! I wish they were still a thing to behold, a thing to be imagined, hoped, and anticipated, something to live for—the reality has displaced from my mind an illusion far more magnificent than itself. I have no words for my disappointment, yet I have not the presumption to suppose that all I have heard and read of Niagara is false or exaggerated—that every expression of astonishment, enthusiasm, rap-

ture is affectation or hyperbole. No; it must be my own fault. Terni, and some of the Swiss cataracts leaping from their mountains, have affected me a thousand times more than all the immensity of Niagara. Oh, I could beat myself, and now there is no help—the first moment, the first impression, is over—is lost; something is gone that cannot be restored. What has come over my soul and senses? I am no longer Anna—I am metamorphosed—I am translated—I am an ass's head, a clod, a wooden spoon, a fat weed growing on Lethe's bank, a stock, a stone, a petrifaction, for have I not seen Niagara, the wonder of wonders, and felt—no words can tell *what* disappointment!

"My Imagination had been so impressed by the vast height of the Falls that I was constantly looking in an upward direction, when, as we came to the brow of the hill, my companion suddenly checked the horses, and exclaimed, 'The Falls!' I was not for an instant aware of their presence; we were yet at a distance looking *down* upon them; and I saw at one glance a flat, extensive plain; the sun having withdrawn its beams for a moment,

there was neither light nor shade nor color. In the midst were seen the two great cataracts, but merely as a feature in the wide landscape. The sound was by no means overpowering. And the clouds of spray which Fannie Butler called so beautifully the ' everlasting incense of the waters,' now condensed, ere they rose, by the excessive cold, fell round the base of the cataracts in fleecy folds, just concealing that furious embrace of the waters above and the waters below.

" All the associations which in imagination I had gathered round the scene, its appalling terrors, its soul-subduing beauty, power, and height, and velocity, and immensity, were all diminished in effect, or wholly lost. I was quite silent—my soul sank within me." It would seem from the account of Mrs. Jameson that she had a most practical mind, for she was evidently delighted by the fact that a " little Yankee boy, with a shrewd, sharp face and twinkling black eyes, could not palm off a flock of gulls on her for eagles." The one sense of comfort that visited her arises from the fact that though the Falls were not complementary to her mood, the smart boy was complimentary

to her smartness, saying. "Well, now you be dreadful smart—smarter than many folks that come here." She tried the Falls from every point and found them from every point of view equally trying, and confesses at last, "The Falls did not make on my mind the impression that I had anticipated, perhaps for that reason, even because I had *anticipated* it; but 'it was sung to me in my cradle,' as the Germans say, that I should live to be disappointed even in the Falls of Niagara."

No two women could have been more unlike than Mrs. Jameson and Margaret Fuller, and yet one is haunted with the feeling that although Mrs. Jameson has so eloquently described "Art, sacred and legendary," Margaret Fuller was no less than Mrs. Jameson a soul sensitive to all influences of Art; but she lifts her eyes to the great Cataract and sees it by the light that fell from the mysterious and sacred centre of her own impenetrable soul. She says: * "The spectacle is, for once, great enough to fill the whole life, and supersede thought, giving us only its own presence. 'It

* "At Home and Aboard; or, Things and Thoughts in America and Europe."

is good to be here' is the best as it is the simplest expression that occurs to the mind," and adds further: "So great a sight soon satisfies, making us content with itself and with what is less than itself. Our desires once realized, haunt us again less readily. Having 'lived one day,' we would depart and become worthy to live another. My nerves, too much braced up by such an atmosphere, do not well bear the continual stress of sight and sound. For here there is no escape from the weight of perpetual creation; all other forms and motions come and go, the tide rises and recedes, the wind, at its mightiest, moves in gales and gusts, but there is really an incessant, an indefatigable motion. Awake or asleep, there is no escape; still this rushing round you and through you. It is in this way I have most felt the grandeur—something eternal, if not infinite.

"At times a secondary music arises; the Cataract seems to seize its own rhythm and sing it over again so that the ear and soul are roused by a double vibration. This is some effect of the wind, causing echoes to the thundering anthem. It is very sublime, giving the

effect of a spiritual repetition through all the spheres."

Margaret Fuller speaks of Niagara as "the one object in the world that would not disappoint."

She says of the Falls: "Daily their proportions widened and towered upon my sight, and I got, at last, a proper foreground for these sublime distances. Before coming away I think I really saw the full wonder of the scene. After a while it so drew me into itself as to inspire an undefined dread, such as I never knew before, such as may be felt when death is about to usher us into a new existence. The perpetual trampling of the waters seized my senses. I felt that no other sound, however near, could be heard, and would start and look behind me for a foe. I realized the identity of that mood of nature in which these waters were poured down with absorbing force, with that in which the Indian was shaped on the same soil."

There is a touch of nature in Margaret Fuller's confession, "The Whirlpool I like very much." She was quite capable of making her friends feel that she could be as "sternly

solemn," as impenetrable to the eye as the Whirlpool itself. The poetic side of her nature was satisfied with the beautiful forest on Goat Island and that wealth of wild flowers of which it was said by Sir Joseph Hooker, that more varieties were to be found on Goat Island than anywhere else in America in the same expanse of wildwood.

Harriet Martineau's impressions were derived from a point not described by either of the other women before named. It was on her second visit to Niagara that we have from her a description of her sensations in passing *behind the American Fall.*

Miss Martineau says: "From the moment that I perceived that we were actually behind the Cataract and not in a mere cloud of spray, the enjoyment was intense. I not only saw the watery curtain before me like the tempest-driven snow, but by momentary glances could see the crystal roof of one of the most wonderful of Nature's palaces. The precise point at which the flood quitted the rock was marked by a gush of silvery light, which, of course, was brighter where the waters were shooting forward, than below where they fell perpendicu-

larly." She then describes quite graphically her successful effort to reach Termination Rock.

We turn now to another English mind, interested in an intense way in human welfare, interested as Miss Martineau was, but how different in the expression of that interest! It is a strange contrast which it exhibits in presence of the great flood.

The mind that created Mr. Pickwick and David Copperfield will have something to say original even about Niagara. But Dickens was at heart a poet. His fiction was, perhaps, exaggeration of the facts, but the facts were forever fixed by it; and brought face to face with Nature in such aspects as make the mighty Cataract, we should expect to have called out from his soul that religious response which mystery and majesty never failed to evoke; and we are not disappointed. He says: "Whenever the train halted I listened for the roar, and was constantly straining my eyes in the direction where I knew the Falls must be, from seeing the river rolling on toward them; every moment expecting to behold the spray. Within a few minutes of our

stopping, not before, I saw two great white clouds rising up slowly and majestically from the depths of the earth. That was all. At length we alighted, and then for the first time I heard the mighty rush of water and felt the ground tremble under my feet." He climbed down the steep and slippery bank, made unsecure to the foot by rain and half-melted ice, to face the Fall, but was not content with this view. A little ferryboat that then plied from one side to the other carried him and his party across the river below the Falls, while he was more and more astounded by the vastness of the scene. He says: "It was not until I came on Table Rock and looked, great Heaven! on what a fall of bright green water—that it came upon me in its full majesty. Then I felt how near to my Creator I was standing; the first effect, and the enduring one, instant and lasting, of the tremendous spectacle, was peace. Peace of mind, tranquillity, calm recollections of the dead, great thoughts of eternal rest and happiness; nothing of gloom or terror. Niagara was at once stamped upon my heart, an image of beauty, to remain there, changeless and indelible, until its pulses cease to beat for-

ever. I never stirred in all that time from the Canadian side whither I had gone at first. I never crossed the river again; for I knew there were people on the other shore, and in such a place it is natural to shun strange company.* To wander to and fro all day and see the cataracts from all points of view; to stand upon the edge of the great Horse Shoe Fall, marking the hurried water gathering strength as it approached the verge, yet seeming, too, to pause before it shot into the gulf below; to gaze from the river's level up at the torrent as it came streaming down; to climb the neighboring heights and watch it through the trees, and see the wreathing water in the rapids, hurrying on to take its fearful plunge; to linger in the shadow of the solemn rocks three miles below, watching the river as, stirred by no visible cause, it heaved and eddied and awoke the echoes, being troubled yet far down beneath the surface, by its giant leap; to have Niagara before me, lighted by the sun and the moon, red in the day's decline, and gray as

* The contrast in this particular between Dickens and N. P. Willis opens up an interesting chapter in the natural differences in literary temperament as it deals with human life.

Photograph by Koonz.

THE WHIRLPOOL.

evening slowly fell upon it; to look upon it every day, and wake up in the night and hear its ceaseless voice, this was enough. I think, in every quiet season now, still do those waters roll and leap and roar and tumble all day long; still are the rainbows spanning them a hundred feet below. Still when the sun is on them do they shine and glow like molten gold. Still when the day is gloomy do they fall like snow, or seem to crumble away like the front of a great chalk cliff, or roll down the rock like dense white smoke. But always does this mighty stream appear to die as it comes down, and always from its unfathomable grave arises that tremendous ghost of spray and mist, which is never laid; which has haunted this place with the same dread solemnity since darkness brooded on the deep, and that first flood before the deluge—light—came rushing on Creation at the word of God."

Nothing could be more characteristic of that strange commingling of wonder and reserve in a human nature than the way in which Hawthorne came toward, and yet not quite *to* the Falls again and again. He says: "I had lingered away from it and wandered to other

scenes. My treasury of anticipated enjoyments comprising all the wonders of the world had nothing else so magnificent; I was loath to exchange the pleasures of hope for those of memory so soon." There was nothing of the severe Yankee temperament in Hawthorne's attitude toward this great scene; it was rather that infusion of French self-indulgence which made him dread to count a delight, as a thing he *had had*. He says: "At length the day came, I walked toward Goat Island and crossed the bridge; above and below me were the rapids, a river of impetuous snow, with here and there a dark rock amid its whiteness, resisting all the physical fury as any cold spirit did the moral influences of the scene."

We may go with Hawthorne along the path if we will. "On reaching Goat Island, which separates the two great segments of the Falls, I chose the right hand path and followed it to the edge of the American Cascade; there, while the falling sheet was yet invisible, I saw the vapor that never vanishes and the eternal rainbow of Niagara. I gained an insulated rock and observed a broad sheet of brilliant and unbroken foam, not shooting in a curved

line from the top of the precipice, but falling headlong down from height to depth." When Hawthorne had made the round of the island and had seen the Falls from every available *coign of vantage*, he stops, as was his custom, to take an account of his mental sensations. "Were my long desires fulfilled, and have I seen Niagara? But would I had never heard of Niagara until I beheld it! Blessed were the wanderers of old, who heard its deep roar sounding through the woods as a summons to its unknown wonder, and approached its awful brink in all the freshness of native feeling; had its own mysterious voice been the first to warn me of its existence, then, indeed, I might have fallen down and worshipped; but I had come haunted with a vision of foam and fury and dizzy cliffs, and an ocean tumbling down out of the sky—a scene, in short, which Nature had too much good taste and calm simplicity to realize. My mind had struggled to adapt these false aspects to the reality, and finding the effort vain, a wretched sense of disappointment weighed me down. I climbed the precipice and threw myself on the earth, feeling that I was unworthy to look at the

great Falls and careless about observing them again." It would be strange, indeed, if the author of "Twice-Told Tales" did not find some "wonder" in this repetition to him in other terms of that which he had already imagined. So he says of the night which succeeded the first day visit: "As there has been, and may be for ages to come, a rushing sound was heard, as if a great tempest was sweeping through the air. It mingled in my dreams and made them full of storm and whirlwind. Whenever I awoke I heard this dread sound in the air, and the windows rattling as with a mighty blast. I could not rest again until, looking forth, I saw how bright the stars were and that every leaf in the garden was motionless. *Never was summer night more calm to the eye, nor a gale of autumn louder to the ear.* The rushing sound proceeds from the rapids and the rattling of the casements is but an effect of the vibration of the whole house shaken by the jar of the Cataract. The noise of the Rapids draws the attention from the true voice of Niagara, which is a dull, muffled thunder, resounding between the cliffs. I spent a wakeful hour at midnight in distinguishing between

its reverberations, and rejoiced to find that my former awe and enthusiasm were reviving.

"Gradually, and after much contemplation, I came to know by my own feelings that Niagara is indeed a wonder of the world, and not the less wonderful because time and thought must be employed in comprehending it." And here follows the sanest advice to those who have felt at first the sense of disappointment that the Cataract is not so great as they had conceived: "Casting aside all preconceived notions and preparation to be awe-struck or delighted, the beholder must stand beside it in the simplicity of his heart, suffering the mighty scene to work its own impression. Night after night I dreamed of it, and was gladdened every morning by the sensations of growing capacity to enjoy it."

This description by Hawthorne, from which these brief quotations have been made, contains nothing truer to a fine nature than that in which he states his last impressions of the Falls: "I sat upon Table Rock; never before had my mind been in such perfect unison with the scene. There were intervals when I was conscious of nothing but the great river roll-

ing calmly into the abyss; rather descending than precipitating itself, and acquiring tenfold majesty from its hurried motion. It came like the march of destiny; it was not taken by surprise, but seemed to have anticipated in all its course through the broad lakes that it must pour their collected waters down this height." The impression made by the water where it falls is noted by Hawthorne and by few besides—the stillness with which it slips away from the stroke of the Cataract, seeming scarcely to move in its eddies, which are only the slight surface of the great depth of waters in the narrow gorge into which it falls. He says of this: "When the observer has stood still and perceived no lull in the storm and stress, that the vapor and the foam are as everlasting as the rock which produces them, all this turmoil assumes a sort of calmness; it soothes while it awes the mind."

Hawthorne is quite right in feeling that Niagara cannot be seen in "company" or worshipped by platoons; for one wants to steal to some unobserved retreat from which to look out and feel, as he says, "The enjoyment which becomes rapture, more rapturous be-

cause no poet shared it, nor wretch devoid of poetry profaned it; the spot so famous through the world was all mine." This same feeling was shared by Charles Kingsley. He says: "I long to simply look on in silence whole days at the exquisite beauty of form and color."

To Dean Stanley the first sight of the Falls seemed "an epoch, like the first view of the pyramids, or the snow-clad range of the Alps." His first view of it was at midnight under a full moon. To him it seemed an "emblem of the devouring activity and ceaseless, restless, beating whirlpool of existence in the United States. But into the moonlight sky there rose a cloud of spray twice as high as the Falls themselves, silent, majestic, immovable. In that silver column, glittering in the moonlight, I saw an image of the future of American destiny, of the pillar of light which should emerge from the distractions of the present—a likeness of the buoyancy and hopefulness which characterizes you, both as individuals and as a nation."

Professor Tyndall's mind had not been robbed of its sentiment by the minute contem-

plation of incident and detail, as Darwin suffered an *atrophy* in the appreciation of poetry, as he himself confesses. It is to Professor Tyndall we owe this bit of poetic prose in which he describes the Whirlpool: "The scene presented itself as one of holy seclusion and beauty. I went down to the water's edge, where the weird loneliness and loveliness seem to increase. The basin is enclosed by high and almost precipitous banks, covered, when I was there, with russet woods. A kind of mystery attaches to gyrating water, due, perhaps, to the fact that we are to some extent ignorant of the direction of its force. It is said that at a certain point in the Whirlpool pine trees are sucked down to be ejected mysteriously elsewhere. The water is the brightest emerald green; the gorge through which it escapes is narrow and the motion of the river swift though silent; the surface is steeply inclined, but it is perfectly unbroken. There are no lateral waves, no ripples, with their breaking bubbles, to raise a murmur, while the depth is here too great to allow the inequality of the bed to ruffle the surface. Nothing can be more beautiful than this sloping, liquid mirror

formed by the Niagara in sliding from the Whirlpool."

If one wishes to know the measure of the mind of N. P. Willis, he may gain it from Willis's description of the Falls of Niagara. It does not suit our purpose to quote it here. It is the same mixture of poetry and commonplace, of incident and contact with people, that made Mr. Willis the ideal magazine writer of that time.

It is strange to note how different points seem to be the centre of focussed thought to different minds. To Mrs. Trollope it was the centre of the Horse Shoe, which seemed "the most utterly inconceivable."

"The famous torrent converges there, as the heavy mass pours in, twisted, rolled, and curled together; it gives the idea of irresistible power such as no other object every conveyed to me. The mighty caldron into which the deluge pours, the hundred silvery torrents congregated around its verge, the smooth and solemn movement with which it rolls its massive volume over the rock, the liquid emerald of its long unbroken waters, the fantastic wreaths which spring to meet it, and then the

shadowy mist that veils the horrors of the crash below, constitute a scene almost too enormous in its features for man to look upon."

To Charles Dudley Warner it is at a different point the mind pauses and feels its most impressive moment. "Nowhere is the river so terrible as where it rushes, as if maddened by its narrow bondage, through the cañon, flowing down the precipice and forced into this contracting space, it fumes and tosses and raves with a vindictive fury, driving on in a passion that has almost a human quality in it: and restrained by the walls of stone from being destructive, it seems to rave at its own impotence, and when it reaches the Whirlpool it is like a hungry animal, returning and licking the shore for the prey it has missed."

Prof. Richard Proctor is impressed by the terrible force of the Niagara at the same spot. Speaking of the fatal attempt of Captain Webb to swim the Whirlpool Rapids he says: "He maybe did not know what a rough estimate of the energies at work in Niagara should have shown, that amid that mass of water which descends from the basin below the Falls to the

Photograph by Nielson.

THE ICE MOUNTAIN.

engulfing vortex of the Whirlpool, the body of the biggest and strongest living creature must be as powerless as a drop of water in mid-Atlantic."

When Anthony Trollope assures us in his discussions upon novel-writing that all that a novelist needs is a table and chair with a bit of shoemaker's wax upon the seat of it, we suspect that he is only excusing his own voluminous production. But he does not lack poetic inspiration, as the following quotations will show: " But we will go on at once to the glory and thunder and the majesty, and the wrath of that upper hell of waters. We are still on Goat Island. Advancing beyond the path leading down to the lower Fall, we come to that point of the island at which the waters of the main river begin to descend. Go down to the end of the wooden bridge, seat yourself on the rail, and then sit till all the outer world is lost to you. There is no grander spot about Niagara than this. The waters are absolutely around you. Here, seated on the rail of the bridge, you will not see the whole depth of the Fall. In looking at the grandest works of Nature and of art, too, I fancy it is never well to

see all. There should be something left to the imagination and much should be half concealed in mystery. The greatest charm of a mountain range is that wild feeling, there must be something strange, unknown, desolate in those far-off valleys beyond. And so here, at Niagara, that converging rush of waters may fall down, down at once into a hell of rivers, for what the eye can see. It is glorious to watch them in their first curve over the rocks. They come green as a bank of emeralds; but with a fitful flying color, as though conscious that in one moment more they would be dashed into spray and rise into air pale as driven snow. The vapor rises high into the air and is gathered there, visible always as a permanent white cloud over the cataract; but the bulk of the spray which fills the lower hollow of that horseshoe is like a tumult of snow.

"This you will not fully see from your seat on the rail. The head of it rises ever and anon out of that caldron below, but the caldron itself will be invisible. It is ever so far down, far as your own imagination can sink it. But your eyes will rest full upon the curve of the waters. The shape you will be looking at is that of a

horseshoe, but of a horseshoe miraculously deep from toe to heel; and this depth becomes greater as you sit there. That which at first was only great and beautiful, becomes gigantic and sublime till the mind is at a loss to find an epithet for its own use. To realize Niagara you must sit there 'till you see nothing else than that which you have come to see. You will hear nothing else and think of nothing else. At length you will be at one with the tumbling river before you. You will find yourself among the waters as though you belonged to them. The cool liquid green will run through your veins, and the voice of the Cataract will be the expression of your heart. You will fall, as the bright waters fall, rushing down into your new world with no hesitation and with no dismay; and you will rise again as the spray rises, bright, beautiful, and pure.

"One of the great charms of Niagara consists in this—that over and above that one great object of wonder and beauty, there is so much little loveliness; loveliness especially of water, I mean. There are little rivulets running here and there over little falls, with pendant boughs above them, and stones shining

under their shallow depths. As the visitor stands and looks through the trees, the Rapids glitter before him, and then hide themselves behind islands. They glitter and sparkle in far distances under the bright foliage till the remembrance is lost and one knows not which way they run.

"Of all the sights in this earth of ours which tourists travel to see—at least of all those which I have seen—I am inclined to give the palm to Niagara. I know no other one thing so beautiful, so glorious, so powerful."

When we know that Bayard Taylor visited the Falls of Niagara we instantly desire to know what impression was made upon a mind which had contemplated such a wide range and variety as this great traveller had seen and had elsewhere described. He thus brings his poetic imagination to the contemplation: "The picturesque shores of the river, the splendid green of the water, and the lofty line of the upper plateau in front, crowned with Brock's Monument, and divided by the dark yawning gorge of Niagara, form a fitting vestibule to the grand *adytum* beyond. The chasm grows wider, deeper, and more precipi-

tous with every mile, until, having seen the Suspension Bridge apparently floating in mid-air on your right, you look ahead, and two miles off you catch a glimpse of the emerald crest of Niagara, standing fast and fixed above its shifting chaos of snowy spray.

"I have seen the Falls in all weathers and at all seasons, but to my mind the winter view is most beautiful. I saw them first in the hard winter of 1854, when a hundred cataracts of ice hung from the cliffs on either side, when the masses of ice brought down from Lake Erie were wedged together at the foot, uniting the shores with a rugged bridge, and when every twig and every tree and bush in Goat Island was overlaid an inch deep with a coating of solid crystal. The air was still and the sun shone in a cloudless sky. The green of the Fall, set in a landscape of sparkling silver, was infinitely more brilliant than in the summer, when it is balanced by the trees, and the rainbows were almost too glorious for the eye to bear. I was not impressed by the sublimity of the scene nor even by its terror, but solely by the fascination of its wonderful beauty, a fascination which constantly tempted

me to plunge into that sea of fused emerald and lose myself in the dance of the rainbows. With each succeeding visit Niagara has grown in height, in power, in majesty, in solemnity; but I have seen its climax of beauty."

Reference has been made in this writing to the remarkable fact that the greater American poets have not attempted to describe Niagara. The fact is easily discernible in their writings; but the cause of this apparent neglect of a theme which has tempted so many feebler singers must be sought in the laws of the human mind as affected by the contact of that which transcends all rhythmic expression. It would seem that the greater the gift of expression for the less overpowering appeal of Nature to the soul, the more impotent in *this presence* the poets have felt. There are not wanting, indeed, poems about Niagara—there is one which flows like the river itself, undammed for forty thousand lines; and in some of these individual lines there are perhaps several lines together which seem to catch the swing of the great Cataract; though at best they are a shrill piping to its mighty *diapason;* they are like the song of the wren on its banks.

Even Mrs. Sigourney's lines are felt by her to be inadequate:

Ah, who can dare
To lift the insect-trump of earthly hope,
Or love, or sorrow, 'mid the peal sublime
Of thy tremendous hymn? Even Ocean shrinks
Back from thy brotherhood and all his waves
Retire abashed. For he doth sometimes seem
To sleep like a spent laborer and recall
His wearied billows from their vexing play,
And lull them to a cradle calm; but thou
With everlasting, undecaying tide,
Dost rest not, night or day."

. . . . . .

"Thou dost make the soul
A wondering witness of thy majesty,
And as it presses with delirious joy
To pierce thy vestibule, dost chain its step,
And tame its rapture with a humbling view
Of its own nothingness, bidding it stand
In the dread presence of the Invisible,
As if to answer to its God through thee."

These are perhaps the best of the lines written by Mrs. Sigourney; but their inadequacy is felt by any one who compares them with a moment's recollection of his own feelings in the presence they attempt to describe.

The lines of Lord Morpeth are well known; they seem most memorable for the sincere expression of that good will which he hoped might ever subsist between the nations, his own and America:

"Oh! may thy waves which madden in thy deep
There spend their rage nor climb the encircling steep;
And till the conflict of thy surges cease
The nations on thy banks repose in peace."

There seems to be a widespread conviction that the oft-quoted lines of John G. C. Brainard are "the noblest lines inspired by the great Cataract." They are notable as rising in the mind of a New England editor who had never seen the Falls, and are said to have been the work of a few moments—an improvisation:

"The thoughts are strange that crowd into my brain
While I look upward to thee. It would seem
As if God poured thee from 'His hollow hand'
And hung his bow upon thine awful front,
And spoke in that loud voice which seemed to him
Who dwelt in Patmos for his Savior's sake
'The sound of many waters' and had bade
Thy flood to chronicle the ages back,
And notch his cent'ries in the eternal rock.

"Deep calleth unto deep. And what are we
That hear the question of that voice sublime?
Oh! What are all the notes that ever rung
From war's vain trumpet by thy thundering side!
Yea, what is all the riot man can make
In his short life to thy unceasing roar!
And yet bold babbler, what art thou to Him
Who drowned a world and heaped the waters far
Above its loftiest mountains?—a light wave
That breaks and whispers of its Maker's might."

There are many other expressions of those who from all parts of the world have matched the feebleness of speech against the stress of feeling; but we forbear to quote further. The extracts given above will prove sufficient for their purpose if they constitute a pleasure to the receptive mind, susceptible to the influences of the scene they visit, and if they prove a gentle warning to the too eager expression of words which so often hide rather than reveal thought.

THE NIAGARA BOOK.

PART III.

BUFFALO AND THE PAN-AMERICAN EXPOSITION.

PLAN OF THE CITY OF BUFFALO.

PART III.

A FEW PAGES ABOUT BUFFALO.

All visitors to Niagara Falls during the summer of 1901 will wish also to see something of Buffalo, and of the Pan-American Exposition. The following pages give some brief general information, and mention a few of the things in Buffalo which a visitor will find most interesting, in different lines.

For One Day in Buffalo.

In the morning see the manuscripts in the Buffalo Library, back of the Soldiers' Monument, on Main Street, opposite Court Street; then down Main Street two blocks to the Erie County Savings Bank building; up Niagara Street one block to the D. S. Morgan building, for the view from the roof; along Niagara Street one block to Franklin Street, then one block to the left to the City Hall (exterior only), and to the left again along Church Street past the Prudential building to St. Paul's Cathedral, seeing the interior (Erie Street entrance always open). Down Main Street again, a few steps, to the great Ellicott Square building, with its central court. One block back of the Ellicott Square building is the new post office, the tower of which may

be well seen from the further Ellicott Square entrance. Then take car to the foot of Main Street, and take a small boat "up the creek and back" to see the commerce of Buffalo. Stop somewhere, if possible, and go on board a vessel unloading grain.

In the afternoon drive "to the Front and around the Park." When approaching the Park tell the driver you wish to see the Crematory and the Red Jacket Monument. Or take one of the wagonette or automobile lines and ride up Delaware Avenue from Niagara Square to the Exposition Grounds.

The City of Buffalo.

The city of Buffalo has, by the census of 1900, a population of 352,387, standing eighth among the cities of the United States. It leads the world in its commerce in flour, wheat, coal, fresh fish, and sheep, and stands second only to Chicago in lumber. In cattle and in hogs, only Chicago and Kansas City exceed it. It is a centre for lithographing and railroad printing, and also for beer breweries, lard refining, meat packing, soap and starch. Its railroad yard facilities are the greatest in the world, and are being increased rapidly. The new steel plant at Stony Point has a capital of over twenty million dollars, and has already expended $1,500,000 for its land. In marine commerce, although the season is limited to six months, Buffalo is exceeded in tonnage only by London, Liverpool, Hamburg, New York, and Chicago.

Better still, it is a city of homes. Strangers view with delight its shaded streets and spacious lawns, alike in the most and least fashionable quarters of the

city. Block houses are few and far between, and through wise preventive measures the more serious tenement-house evils have never been allowed to develop. The climate in summer is delightful, and it is one of the healthiest cities in the country, with a limitless supply of pure water. It has one of the first free municipal bath houses in existence; the Paris Exposition of 1900 has pronounced its crêche the best managed in the world, and its new Albright Art Gallery will be unrivalled for its purposes. It has more miles of asphalt pavement than any other city, and is a paradise for bicyclers, who may be seen on its streets almost every day in the year. Socially it combines the cordiality of the West with the conservatism of the East, and in few large cities does money play so slight a part in social demarcations. Coal and food supplies are so low in price that it is one of the cheapest of the large cities in which to live. Although the city and surrounding country are very flat, with little of the picturesque, it has a beautiful series of parks in which to drive, the shores of Lake Erie and of the Niagara River are accessible after leaving the immediate suburbs, and Niagara Falls is but twenty miles away.

A general view of the topography of the city and harbor may be had from the roof of the D. S. Morgan Building, Niagara and Pearl streets, or from the roof of the Lenox, on North Street, near Delaware.

Buffalo River and Harbor.

The visitor should on no account fail to see something of the commerce of Buffalo, its elevators and coal trestles, and he will be amazed at the muddy little stream

the commerce of which, though restricted to the six months of the navigation season, is exceeded, as stated above, in this country only by New York and Chicago, and abroad only by London, Liverpool, and Hamburg. The season's commerce of Buffalo in flour, grain and coal alone equals ten per cent. of the yearly foreign trade of the entire United States.

Buffalo has thirty-two elevators in addition to floating or transfer elevators. It is exceedingly interesting to watch the steam shovels unloading a cargo of grain, and their rapidity is marvellous, sometimes reaching 25,000 bushels per hour. A steamer has entered port at 9.20 A.M., discharged 77,000 bushels of wheat, taken on 2,300 tons of coal, and been ready to sail at 7 P.M.

The coal trestles on the Buffalo River and Harbor are the largest in the world, one of the Lackawanna Railroad exceeding a mile in length.

The shipping facilities of Buffalo may be seen most easily by taking one of the small boats at the foot of Main Street, and going "up the creek" and back.

Erie Canal.

This canal, said to be the largest in existence excepting one in China, extends 348 miles, from Buffalo to Albany, and was completed in 1825, at an original cost of $9,000,000, being put through, with great ridicule and opposition, by Governor De Witt Clinton, and being nicknamed "Clinton's Big Ditch." It quickly paid for itself in tolls, and at once reduced the cost of getting a barrel of flour from Buffalo to Albany, from ten dollars in three weeks' time, to *thirty cents* and one week's time. Before the completion of the New York

Central Railroad it carried thousands of passengers and emigrants; it now carries freight only. It has fifteen single locks and fifty-seven double, the working of which may be seen most effectively at Lockport, twenty-five miles from Buffalo.

The canal may be seen most pleasantly in a drive to the Front; most easily upon Main Street, a block below the New York Central Railroad station; and most effectively by going a short distance down Erie Street, as far as the Grand Trunk station, or by taking a Belt line train between the Exposition Grounds and the main New York Central station.

Architectural Features.

Among public buildings those best worth seeing architecturally are the new Post Office, Washington and Swan Streets; the City Hall, Delaware Avenue and Eagle; the 74th Regiment Armory (Lansing), Niagara and Prospect Streets, and the Buffalo State Insane Asylum (Richardson), immediately southwest of the Exposition Grounds.

In banks, office buildings, etc., the Buffalo Savings Bank (Green & Wicks), at the corner of Main and Genesee Streets; the small Bank of Commerce (Green & Wicks), Main Street, below Seneca; the great Ellicott Square Building (Burnham), said to be the largest office building in the world, with 600 offices, 40 stores and 16 counting rooms; the Erie County Savings Bank Building (Post), Main and Erie Streets, and the Prudential Building (Adler & Sullivan, Chicago), Pearl and Church Streets, the most handsomely finished office building in Buffalo. The Medical School of the

University of Buffalo (George Cary), on High Street, a little to the east of Main Street, is a handsome and a well-equipped building. The Buffalo General Hospital is a short distance farther down the same street.

Among private residences may be mentioned the four houses by McKim, Mead & White, three at the northwest and one at the southwest corner of Delaware and North Streets; the house of Truman G. Avery (Newcomb, Boston), on the Circle; the house and stable of William Hamlin (Marling & Burdett, Buffalo), 1058 Delaware Avenue, and that of George V. Forman (Green & Wicks), Delaware Avenue. Richardson has two houses in Buffalo—of W. H. Gratwick, 776 Delaware Avenue, and George Bleistein, 438 Delaware Avenue.

Churches, the Crematory, the Red Jacket Monument, etc., are mentioned under separate headings. A drive up Delaware Avenue from the Terrace to Ferry Street, with a digression down North Street and around the Circle, will show the best of the private architecture of Buffalo.

CHURCHES.

Buffalo has some 200 churches. Those noted below as most desirable for a visitor to see are selected mainly for architectural reasons.

St. Paul's Cathedral.—The cathedral church of the Episcopal diocese of western New York. It was built in 1850, of brown sandstone, and its beautiful spire rises to a height of 268 feet. It stands in the heart of the business district, at the corner of Main and Erie Streets. The interior is well worth seeing, and the side entrance, on Erie Street, is always open.

Temple Beth Zion.—On Delaware Avenue, between North and Allen Streets, and adjacent to the Twentieth Century Club. Built in 1890, the architects being Edward A. and William W. Kent, of Buffalo. It is of Medina brown sandstone, of Byzantine architecture with Romanesque features. The interior decoration of the great dome is unusual and very effective. Of especial interest is a tablet from the St. Paul's Episcopal congregation, in commemoration of their use in 1888 of the former Beth Zion Synagogue, at a time when the Episcopal cathedral could not be used, through an explosion of natural gas. Another similar tablet is from the Delaware Avenue Baptist Society. Services are held in the Synagogue on Saturdays at 10 A.M. and on Fridays at 7.30 P.M., to which the public are welcome.

First Presbyterian Church.—On "The Circle," where North Street changes to Porter Avenue. Built in 1890, of Medina sandstone, the architects being Green & Wicks, of Buffalo. The high campanile is a landmark from long distances. The interior also is well worth seeing.

St. Louis' Catholic Church (French and German).—At the corner of Main and Edward Streets. Its spire is especially worthy attention.

St. Joseph's Cathedral.—Far down town, at the corner of Franklin and Swan Streets. It has a carillon of forty-three bells, but a small portion of which are in use.

Delaware Avenue Baptist Church.—On Delaware Avenue, between Bryant and Utica Streets. Erected in 1894 at a cost of some $200.000. The interior is magnificent.

St. Andrew's Episcopal Church.—Far over on the East Side, on Goodell Street, near Michigan. Notable for the extreme simplicity, severity and inexpensiveness of its construction, and for its very high church services.

Buffalo Library.

Centrally located, adjoining the little park in which stands the Soldiers' Monument, on Main Street, between Lafayette and Clinton. The library was started in 1836, the present building being erected in 1887. It was taken by the city as a free public library in 1897, and is notable for the enormous popular use which has developed since that date. Its cards are held by 65,703 citizens of Buffalo, and the number of books circulated in 1900 was 981,235. Although this total is exceeded by several libraries in this country, it is stated that in no other single building in the world is there so large a number of books given out per annum. A feature of the library is the open shelf room, in which over 19,000 carefully selected volumes are thrown open to full access and withdrawal by the public. The children's room, on the second floor, is always interesting, but has no especially distinctive features.

On the main floor of the library is a remarkably fine collection of original manuscripts, by far the largest and most valuable in this country, excellently arranged under glass for inspection by visitors. They range in date from Melanchthon and Bacon to Emerson's Representative Men (entire) and Mark Twain's Huckleberry Finn. One letter is from George Ticknor, introducing at length Charles Sumner to the poet Southey. Another is from John Bright to Theodore Tilton. Other names,

selected almost at random, are Miss Alcott, Aldrich, Balzac, Beaconsfield, Beranger, Blake, Charlotte Brontë; interesting unpublished letters from Robert Browning and Mrs. Browning, Bryant, Burke, Burns, Aaron Burr, Carlyle, Clay, Cleveland, Coleridge, Cooper, Cowper, Jefferson Davis, Dickens, Dryden, Dumas, George Eliot, Benjamin Franklin, Gladstone, Grant, Thomas Gray, Greeley, Bret Harte, Hawthorne, Heine, Hogg, Holmes, Hood, Howells, Hugo, Washington Irving, Sam Johnson, Keats, Lamartine, Lamb, Lincoln, Longfellow, Lowell, Lytton, Cardinal Newman, Macaulay, Poe, Pope, Reade, Richter, Rossetti, Rousseau, Ruskin, Scott, Shelley, Southey, Tennyson, Thoreau, Trollope, Voltaire, Washington, Webster, Whitman, Whittier, Wordsworth, etc. They are in no case autographs only, though some are of but a few lines.

The library is open on Sundays from 11 A.M. to 9 P.M.

In the same building are the ACADEMY OF NATURAL SCIENCE, the BUFFALO HISTORICAL SOCIETY, which after 1901 will occupy the marble New York State building of the Pan-American Exposition, and the ACADEMY OF FINE ARTS. All are free to the public. The Fine Arts Academy has some excellent pictures, a notable collection of etchings and, a good collection of casts. After 1901 it will be housed in the magnificent Albright Art Gallery.

GROSVENOR LIBRARY.

A pleasant and quiet reference library of some 50,000 volumes, at the corner of Franklin and Edward Streets. Not open evenings.

Mr. R. B. Adam has a noteworthy private library pertaining to Johnson and Burns, and in lesser degree to Ruskin, which he is usually very glad to show to those especially interested.

Washington Market.

Those unfamiliar with city market stalls of this nature will find this quite unique. It is on Chippewa Street, but a block to the east of Main, and is open on Tuesdays, Thursdays, and Saturdays, the latter being the better day to choose. The little stalls, the carts, the bustling market women, all have a curiously foreign appearance. The Elk Street Market, at Elk, Perry, and Market Streets, is still larger, but less accessible.

Wading Pond, Humboldt Park.

This is a shallow pool of water 550 feet in diameter, with stone coping and sandy bottom, sloping gradually to a depth of only three feet at the centre. On pleasant afternoons or holidays, it is filled with wading children, some pushing baby carriages, and is a most picturesque and interesting sight. Its distances, great in themselves, seem still more enormous to children, and they get great pleasure from it, and from the general excitement of the place. The park has other attractive features, in fountains, aquatic plants, etc. It is about two miles from the centre of the city, and may be reached by the Genesee Street and Best Street cars.

Forest Lawn Cemetery.

An attractive spot, covering 267 acres of forest, lawn, and stream. It is immediately adjacent to the Park

Meadow and to the Pan-American Exposition grounds. The visitor should see, and can hardly fail to see, the statue of Red Jacket, erected by the Buffalo Historical Society to the memory ot the last chief of the once powerful Seneca tribe. The monument should properly have been placed in the heart of the busy city, which would have given greatly added force to the inscription on the base, the words of Red Jacket himself:

"When I am gone, and my warnings are no longer heeded, the craft and avarice of the white man will prevail. My heart fails me when I think of my people so soon to be scattered and forgotten."

Near-by is the Blocher Monument, which Baedeker describes as "a piece of crude realism having strong local admirers." It shows, under a glass canopy, a young man upon his deathbed, with the father and mother, in life size, on either side, and an angel hovering above. The monument to Francis W. Tracy, by Augustus St. Gaudens, is very simple, and is not apt to be found by the visitor unless by special inquiry.

Crematory.

This beautiful little building, of brown sandstone covered with English ivy, is on Forest Avenue, opposite the Forest Lawn Cemetery, and not far from the Pan-American grounds. It was built in 1885, the first cremation taking place that year. Its use is now sufficiently common to excite little or no comment. It contains a chapel for funeral services. Visitors are not allowed to see the process of incineration, but the method used is clearly explained and shown.

CLUBS.

The chief social clubs of the city are as follows:

Buffalo Club.—This is the representative club of the city, having over 400 members. It has a handsome club-house, at the corner of Delaware Avenue and Trinity Place, which is especially noticeable for its beautiful natatorium and billiard room.

Saturn Club.—A smaller and more exclusive club, at the corner of Delaware Avenue and Edward Street. The club is chiefly noted for its "no treating" rule, and for the unique and original nature of many of its entertainments and accessories. At one end of the large lounging hall is the motto, in wrought iron letters, from Izaak Walton's "Complete Angler," "Good Company and Good Discourse are the very Sinews of Virtue," while at the other end of the hall, over the windows, in much smaller letters, is written, "Here the women cease from troubling and the wicked are at rest." The chief points of interest in the building are the large hall, running up through the two stories, with leaded glass windows opening into the library and corridors above, the handsome and well-equipped library on the Delaware Avenue front, the café, with its unique inscriptions, and the St. Patrick's Room in the basement.

University Club.—A pleasant club mainly of the younger college men, started in 1894, and at present occupying a former residence of the Hon. Wilson S. Bissell, 295 Delaware Avenue, between Chippewa and Tupper Streets.

Twentieth Century Club.—A woman's club, with a

very beautiful club house on Delaware Avenue, below North Street. The club house is rarely open evenings, but is much used through the day. It has a good library and reading room, music room, main court, and a concert hall which is often rented for entertainments. Its decorations and furnishings are artistic and quite unique.

Country Club.—Of the usual nature, purposes and membership of country clubs. The club was incorporated in 1889, and occupied the house which is now the headquarters of the Board of Women Managers, at the Pan-American Exposition. They had good stables, some twenty acres of land, and the use of the park lands adjoining for polo and for golf. The site selected for the Pan-American included all the ground rented by the Country Club, and it was obliged to take temporary quarters on Amherst Street, farther to the east. The club has an excellent membership, and its horse shows and contests are largely attended.

Ellicott Club.—This is a men's lunching club, organized in 1895, with large and very handsome rooms on the tenth floor of the Ellicott Square Building. Its main dining hall is much in use for large dinners, dances, etc. Separate rooms are provided for women, or for members accompanied by women. The club has been very successful.

Admission to all these club houses is, of course, possible only through a card from one of their members.

Fresh Air Mission.

The Fresh Air Mission Hospital, for sick babies, is a most attractive building, admirably located on the beach

of Lake Erie, at Athol Springs, ten miles from Buffalo, and may be reached either by the Pennsylvania or the Lake Shore Railroad. The return trip may easily be made in a morning or afternoon. The hospital is within easy walking distance from the station.

The Fresh Air Mission proper, at Cradle Beach, is thirteen miles farther out on the same railroads, the nearest station being Angola, from which there is a drive of two miles. This also is admirably situated, and has attractive buildings excellently adapted for their purposes.

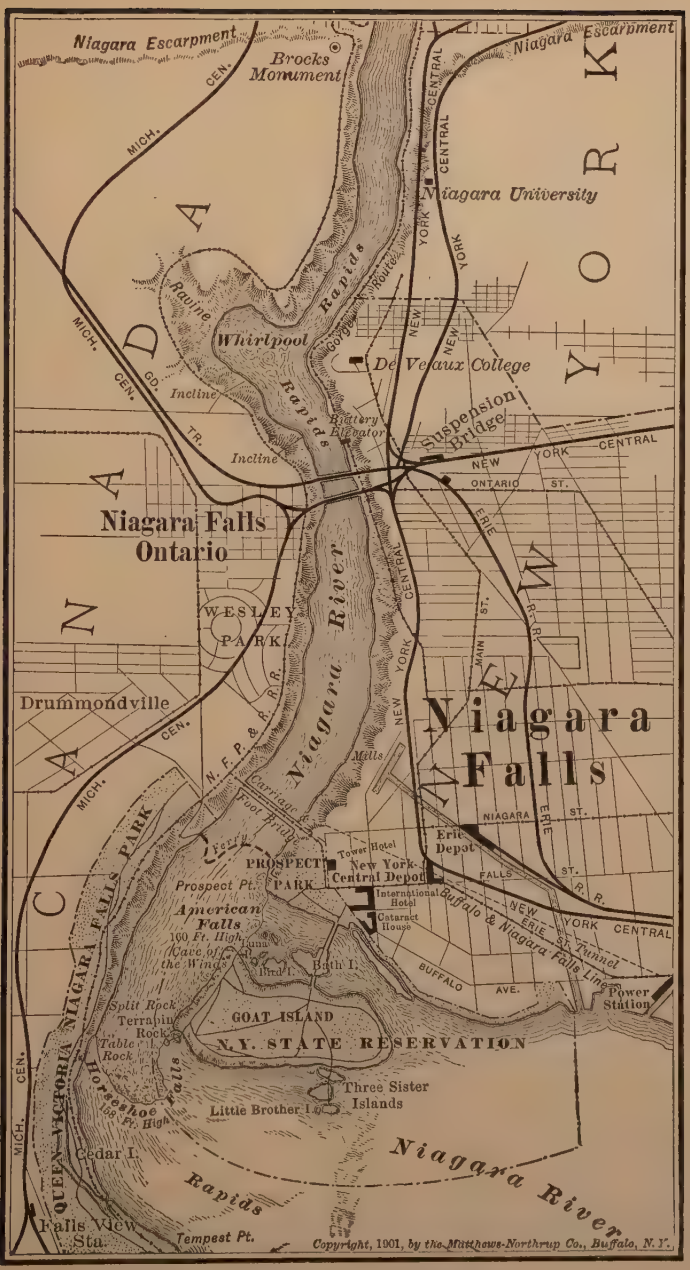
The little Cradle Banks, which are conspicuous every summer throughout Buffalo, take in upwards of $1,000 every year, (last summer it was over $3,000) in small sums. It is hoped that this summer their receipts may be greatly increased. The society has no endowed fund.

Fire Tugs.

Those coming from inland cities will be interested in Buffalo's fire-tugs, a valuable safeguard for the city's extensive river and harbor property.

Presidents Cleveland and Fillmore.

There have been two Buffalo presidents. Those interested may see the old law office of President Cleveland in the Weed Block, at the corner of Main and Swan Streets ; while the home of President Fillmore is now a large boarding-house, or almost hotel, "The Fillmore House," on Niagara Square, at the corner of Delaware Avenue and Genesee Street. The house has been considerably added to.



NIAGARA FALLS AND VICINITY.

Hotels and Boarding Houses.

The *Hotel Iroquois* is one of the best hotels in the United States, and its cafe is not approached in cuisine by any other hotel or restaurant in Buffalo. Its brilliant rooms and bar are costly and magnificent. It is, however, in the business portion of the town. *The Lenox* is a large apartment house and hotel of the finest type and in the most fashionable residence portion of the city, being on North Street, just west of Delaware Avenue. The view from the roof is well worth seeing. The *Niagara Hotel* is delightfully located at the Front, opposite Prospect Park. If the management in toon is as good as it promises to be, it will be a delightful place at which to stay. The *Concord, New Tifft Brown* and *Johnston Houses* are all good hotels. *Stadler's Hotel* and the *Park Hotel* are new and temporary structures, adjacent to the Pan-American grounds. The Stadler Hotel has the better location, but is much larger, having accommodations for 3,000 people. It is of two stories only. A large number of apartment houses and some business blocks have been turned into hotels for the Pan-American year.

There are many good boarding houses in Buffalo. Pan-American visitors desiring accommodations in them, or in good private houses, would best write to the Bureau of Information of the Pan-American Exposition, which will furnish them full and prompt information, with prices.

Theatres.

The only thoroughly first-class theatre in Buffalo at present is the Star. The Teck Theatre has a stock com-

pany, and usually presents melodramas of the better grade. It is an excellent and very comfortable theatre, with low prices. Shea's Theatre is a large variety hall, of the best of its kind, with clean shows and very large audiences. The Lyceum Theatre is a good low-priced theatre. The Court Street is a low-priced house, with entertainments mainly of the variety order, and adapted mainly for male audiences.

Newspapers.

The "Buffalo Morning Express" (one cent) and the "Buffalo Commercial"—an afternoon paper, and the only two-cent daily paper now published in Buffalo—are the daily papers of highest grade. The evening "News" (one cent) is an excellent paper, as are also the evening "Times" and "Enquirer," and the morning "Courier" and "Review." There are three good daily papers in German, and one in Polish. The Sunday editions are all five cents.

Information for Shopping.

Flint & Kent, 554 Main Street, carry the highest grade of stock in general *dry goods*, and next to them come the Adam, Meldrum & Anderson Company, 404 Main Street, a much larger general department store. J. N. Adam & Company, directly opposite, at 389 Main Street, and the William Hengerer Company, at 256 Main Street, are other very large department stores, of the highest standing, and with a somewhat cheaper general line of goods. T. E. Dickinson & Co., 254 Main Street, stand easily first in *jewelry*, *silver*, etc. T. C. Tanke, and King & Eisele, are other good stores in

this line. In *crockery* and *glass*, Walbridge & Co., 392 Main Street, have the largest and best assortment, though Irwin R. Brayton, 692 Main Street, has a better stock in the choicest grades. For *men's furnishings* of high grade, the best stores are: W. C. Humburch, 329 Main Street; Kinne & Kinne Company, 357 Main Street, and Flint & Kent, 554 Main Street. Among the better *book stores* are: Peter Paul & Co., 448 Main Street; Otto Ulbrich, 386 Main Street; H. H. Otis & Sons, 284 Main Street, and the larger dry-goods stores. For *flowers* may be mentioned: Palmer, Rebstock, Zimmerman, Scott, Anderson, etc. For *carriages*, C. W. Miller is so very much the largest establishment that he alone can be mentioned here, though some of the smaller concerns are equally good; *automobiles* may be obtained at low rates from the Woods Motor Vehicle Company; the "Automobile Station, No. 1," and, from J. L. Langdon (Locomobiles). Practically the only *baggage delivery* is that of C. W. Miller, 8 East Eagle Street. On presentation of railroad tickets he will check baggage direct from the house to destination, and for a slight extra charge will include delivery at house at destination. The best *candy* stores are Huyler's, Gager's, and Faxon, Williams & Faxon.

Almost all the retail stores of importance are on Main Street, between Seneca and Tupper. There are, of course, many good stores in Buffalo in addition to the few which we have mentioned here.

Doctors.

The surgeons and physicians in these lists are all of high professional standing and reputation, and except

in the list of dentists only those are included who are on the staff of some one of the leading hospitals. There are many other excelent doctors in Buffalo, but it seems well for the purpose of this book, to make this distinction. Those whose names are printed in *italics* are homeopathists.

General Physicians.—Henry R. Hopkins, 444 Franklin Street; C. C. Wyckoff, 482 Delaware Avenue; Charles Cary, 340 Delaware Avenue; Charles G. Stockton, 436 Franklin Street; John Parmenter, 519 Franklin Street; DeLancey Rochester, 469 Franklin Street; John H. Pryor, 56 Allen Street; *B. J. Maycock*, 33 Allen Street; *A. M. Curtiss*, 780 West Ferry Street; *Truman J. Martin*, 279 North Street.

Surgeons.—Roswell Park, 510 Delaware Avenue; John Parmenter, 519 Franklin Street; Herman Mynter; 566 Delaware Avenue; W. C. Phelps, 148 Allen Street; W. W. Potter, 284 Franklin Street; Eugene A. Smith, 1018 Main Street.

Nervous Diseases.—James W. Putnam, 525 Delaware Avenue; W. C. Krauss, 371 Delaware Avenue.

Children's Diseases.—Dr. W. H. H. Sherman, 666 Main Street; Irving M. Snow, 476 Franklin Street.

Skin Diseases.—Ernest Wende, 471 Delaware Avenue; Grover W. Wende, 471 Delaware Avenue.

Women's Diseases.—M. D. Mann, 37 Allen Street; P. W. Van Peyma, 445 William Street; M. A. Crockett, 452 Franklin Street; *G. R. Stearns*, 201 Linwood Avenue; *Jessie Shepard*, 21 Irving Place.

Eyes and Ears.—Lucien Howe, 183 Delaware Avenue; H. Y. Grant, 399 Delaware Avenue: Elmer E. Starr, 523 Delaware Avenue; F. W. Hinkel, 412 Frank-

lin Street; A. A. Hubbell, 212 Franklin Street; *F. Park Lewis*, 454 Franklin Street.

Nose and Throat.—F. W. Abbott, 523 Franklin Street; W. S. Renner, 301 Pearl Street; Max Keiser, 388 Franklin Street; *F. Park Lewis*, 454 Franklin Street.

Dentists.—W. C. Barrett, 208 Franklin Street; M. B. Straight, 80 W. Huron Street; F. E. Howard, 331 Franklin Street; C. E. Wettlaufer, 157 North Pearl Street.

Drives.

The stereotyped drive in Buffalo, is "around the Front and to the Park," a drive of a couple of hours. Now that the Park Lake is included, for the summer, in the Exposition Grounds, this portion of the drive will be deprived of much of its beauty, yet the Park Meadow is very attractive and restful. Delaware Avenue is one of the famous residence streets of the country. Linwood Avenue is also an attractive street, and North Street, Summer Street, Ferry Street, etc., all have beautiful residences and lawns.

A drive to Humboldt Park will show the more thickly settled portion of the city, largely German. The Wading Pond is worth seeing, on afternoons or school holidays.

Those who wish longer drives, and who have the courage to pierce the belt of railroads which surround the city, and the monotonous territory of the immediate suburbs, may try the river road to Tonawanda (distant about ten miles); may take the ferry to Fort Erie at the foot of Ferry Street and drive to Niagara Falls along the Canadian shore of the Niagara River, or such por-

tion of this twenty-mile distance as they may elect; or may drive through Cazenovia or South Park, and to Athol Springs (distant about eleven miles), and on along the lake shore as much farther as they may desire. All the most beautiful portion of the drive is after passing Athol Springs.

Bicycle Trips.

There are many beautiful bicycle trips about Buffalo for those who take rides of thirty to forty miles, or by taking a train one way the distance can often be halved. Recourse should be had to the bicycle stores and book stores for books descriptive of different trips and routes. The favorite century run is from Erie to Buffalo, along the shore of Lake Erie, with excellent roads all the way, and of course this may be taken from any intermediate point. By taking the Lake Shore or the Pennsylvania train to Silver Creek, one may have a ride of forty-five miles back to Buffalo, usually with the wind, the greater part being along the shore of Lake Erie. A delightful ride of ten miles may be had by taking the same trains to Lake View, riding back along the lake to Athol Springs, and taking a return train there on either road. A beautiful trip is to take the Erie Railroad train to Hamburgh, ride seven or eight miles along the precipitous banks of Eighteen-mile Creek to North Evans, nine miles along the shore of Lake Erie to Athol Springs, and then take the train or ride back the eleven miles to Buffalo.

The trip to Tonawanda (ten miles distant) is a very favorite one, there being asphalt or brick pavement all the way. The same trip along the tow-path of the Erie

canal is very much more beautiful, though not so good riding. The ride to Niagara Falls along the Canadian bank of the Niagara River (take boat to Canada at foot of Ferry Street) is magnificent, but the road is only fair, and sometimes hardly that. The trip from Niagara Falls on down the river to Lake Ontario is very beautiful, and is best on the American side. An interesting, though uneven, trip is to ride from Port Colborne on Lake Erie to Port Dalhousie on Lake Ontario, twenty-five miles, along the Welland Canal. Customs entries may be required in passing into Canada save at Niagara Falls, where there is usually no hindrance or trouble. Bicyclers at Niagara Falls should not fail to ride to and around the Dufferin Islands.

No bicycle rider should fail, while in Buffalo, to ride up Delaware Avenue from the Terrace to Ferry Street, and to ride down North Street to the Front. The streets are much more beautiful seen in this way than in driving behind horses.

Bicycle riders in Buffalo are obliged to carry bells, but are not obliged to carry lamps.

Trips by Boat.

Those who desire a trip on Lake Erie will find various excursions advertised in the daily papers, the boats usually leaving from the docks at the foot of Main Street. For an excursion on the lake, the trip to Port Colborne is as good as any, and Port Colborne itself is interesting as one terminus of the Welland Canal, from Lake Erie to Lake Ontario. A shorter ride is to Crystal Beach, a miniature Coney Island, on the Canadian shore of Lake Erie. An all-day's trip may be had by taking a boat

for Erie. None of these boats are of very high grade, but all are entirely seaworthy.

The trips down the Niagara River are also interesting. The trip by boat down the river to Niagara Falls is decidedly worth taking.

The trip up the Great Lakes from Buffalo is an interesting and delightful one. The best boats to take are the "Northwest" and "North Land," which are both beautiful vessels, magnificently finished and furnished, and with an excellent cuisine. The boats of the Erie & Western Transportation Company (Lake Anchor Line) are good, though not new, and with a much simpler table.

Boating.

There is very little boating in Buffalo. The Buffalo Yacht Club, at the foot of Porter Avenue, "The Front," has a three-story building, with dock and pier. It has a membership of something over 200, with annual dues of $15.00.

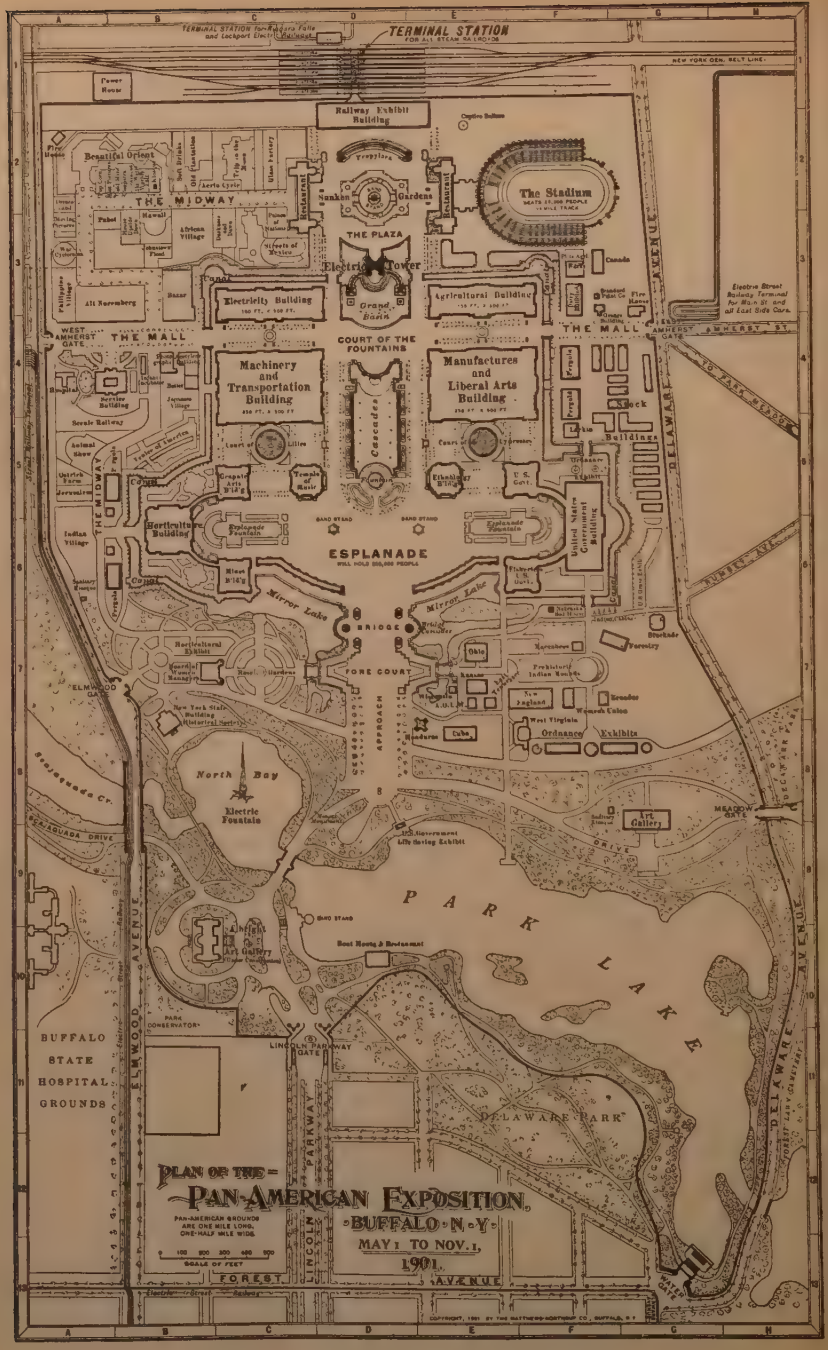
Boats may be chartered at the foot of Ferry Street, reached by the electric cars or the Belt Line trains.

Street Cars.

There is a complete system of "transfers" in Buffalo, and visitors changing from one street car line to another may obtain free transfer tickets from the conductor.

THE PAN-AMERICAN EXPOSITION.

The name Pan-American, of course, means all American, and the Exposition is therefore one of all America; or, as it is sometimes put, of the three



PLAN OF THE PAN-AMERICAN EXPOSITION.

Americas—North, Central, and South. The Exposition is intended to illustrate and to celebrate the achievements of the Western Hemisphere during the nineteenth century, and no exhibits have been admitted except from the Western Hemisphere and the outlying dependencies of the United States in the Sandwich Islands, Samoa, the Philippines, and Guam. This restriction is confined to the Exposition buildings; the amusements and exhibits on the Midway come from all quarters of the globe.

The Pan-American Exposition is a monument to the public spirit, the liberality, and the good taste of the citizens of Buffalo. The idea was first formally presented to the public at a dinner held at the Hotel Iroquois, January 21, 1899, and the response was cordial and immediate. $427,000 was subscribed at the dinner, the newspapers all took up the movement with enthusiasm, and within *six days*, and almost before any organized canvassing could be got under way, over a million dollars ($1,114,000) of stock had been subscribed for by *over ten thousand* different people, in amounts ranging from $10 to $25,000; and at this writing over eighty-eight per cent of the amount so subscribed has been collected, and seven per cent. more is considered collectable. The total stock subscription reached $1,731,520, from nearly twelve thousand subscribers. In March, 1899, the State of New York gave to the Exposition its special sanction, and voted an appropriation of $300,000; and in the same month it was indorsed by the United States Congress, and an appropriation of $500,000 voted. The invitations to participate sent to the other countries of the hemisphere have been from the National Government, through the De-

partment of State. Mr. J. J. Albright, a public-spirited citizen of Buffalo, contributed $400,000 for a permanent marble art gallery, to stand upon the grounds of the Exposition, and the Buffalo Historical Society contributed $45,000, under an arrangement by which the New York State Building at the Exposition was to be permanent, and to become the home of the Historical Society at the close of the Exposition. A bond issue of $2,500,000 was authorized, and promptly taken up by banks and capitalists. The total cost of preparing the Exposition, including the Midway—which surpasses in quality and scope anything of the kind yet seen in this country—exceeds ten million dollars.

The Exposition has been most fortunate in its choice of a director-general—the Hon. William I. Buchanan. Mr. Buchanan has had ample previous experience in expositions, beginning with the World's Fair, at Chicago, and has since been the Minister of the United States to the Argentine Republic, resigning this position to assume the direction of the Pan-American Exposition. It is probable that no other citizen of the United States has so wide an official acquaintance in South America or is more highly respected. He has great executive ability, an enormous capacity for detail, and is an untiring worker. He is a man of broad culture and of quick and keen judgment.

The Board of Directors of the Exposition consists of twenty-five men, representative of the best elements of the city. It was this body which had the difficult task of mapping out the scheme of the Exposition, selecting the site, the architects, etc. The architects were not chosen by any competitive process, but were selected

THE STADIUM.

by the Board of Directors, and are as follows: Carrère & Hastings, New York; Howard, Cauldwell & Morgan, New York; Babb, Cook & Willard, New York; Peabody & Stearns, Boston; Shepley, Rutan & Coolidge, Boston; Green & Wicks, Buffalo; George Cary, Buffalo; Esenwein & Johnson, Buffalo. The Director of Works is Newcomb Carlton, of Buffalo; Director of Color, C. Y. Turner, of New York; Director of Sculpture, Karl Bitter, of New York; the Landscape Architect is Rudolf Ulrich, and the Chief of the Electrical Department, Henry Rustin, with Luther Stieringer as Consulting Expert.

The visitor must not expect buildings of the height or size of those at Chicago. The whole style of architecture and the whole scheme of the Exposition are an utter change from the Chicago type. To compare this Exposition with the one at Chicago is like trying to compare Cervantes and Aristotle. The buildings are low, with red-tiled roofs; are brilliant with color, are rich with ornament, with domes and towers and turrets, with balconies and loggias, and, above all, with pergolas, or arbors, covered with thickly growing vines. These vine-covered arbors are so numerous as to form a distinctive feature of the Exposition, which is rich in all phases of landscape work.

The grounds of the Exposition are not as large as at Chicago. They are, however, a mile long and half a mile wide, covering 350 acres, which is quite enough territory for people to cover. They include the beautiful Park Lake of the City of Buffalo, which D. H. Burnham, of Chicago, has called the most beautiful artificial or park lake of which he knows.

Some of the chief points on which this Exposition prides itself, and which are therefore especially worthy of mention, are as follows. It is claimed that in the points mentioned this Exposition surpasses any that has been held:

Electrical Effects.—The electrical features are said to exceed in variety, in novelty, and in quantity, those of all other expositions. The unlimited forces of Niagara Falls supply the motive power. No arc lights are used, except inside the buildings; but the small incandescent lights, which it was at first promised should exceed 200,000, it is now stated, are over 500,000 in number. The Electrical Tower is the crowning feature of the Exposition.

Sculpture.—More groups of sculpture, and more of original sculpture (all by artists of this hemisphere) than at any previous exposition.

Fountains and Canals.—The electrical fountain in the North Bay, the Fall, seventy feet high, in front of the Electric Tower; the Fountain of Abundance, the Fountains of Man, of Prometheus, of Lycurgus, the Fountains of Nature, of Ceres, of Kronas, the Courts of Lilies and of Cypresses, the cascades at either end of the Triumphal Bridge; the Park Lake, the Mirror Lakes, the Canal (a mile long, and bordered in its entire length by a walk shaded by a double row of poplars) which winds among the buildings—all these offer enchanting water effects.

Flowers and Vines.—The landscape work is rather of the Italian order, with sunken gardens, terraces, flowers, vines, shrubs, and carefully arranged

groups of trees. Hundreds of thousands of spring bulbs—five tons of crocuses, tulips, hyacinths, etc. —have been set out, and roses and other flowers will follow in their season in almost equal profusion.

Color Effects.—The work of coloring, or rather of illuminating in color, for this better describes the method followed, such a mass of buildings, with such intricacy of ornament and of detail, is a stupendous one. At this writing the work is not so complete that it can be fairly judged, and it can only be said that it is being done very boldly, and with great capability and taste. Such lavish use of color is something new in architecture, and is an original and striking feature of this Exposition, which has already given to it the name of the Rainbow City.

The Grand Courts.—The view points, or "Courts of Honor" of this Exposition, are well planned and surprisingly extensive. It is claimed that the Esplanade will hold 250,000 people, and opening out of this is the Court of Fountains, and beyond that the Plaza.

The Stadium.—A noble building, the arena for sports and athletic contests, with seating capacity for 12,000 persons. A delightful innovation.

The Midway.—This Exposition has given the "Midway" an important position, close to the main buildings, though without allowing any portion to interfere with the architectural effects of the Exposition proper. The high grade of almost all of the Midway attractions is something surprising, and they form an instructive as well as an amusing

feature. The broad avenue winding through the Midway is nearly three-quarters of a mile in length.

It will be seen from this review that the Pan-American Exposition is really noteworthy in the originality of many of its features. The Art Gallery offers still another excellent feature in that all the work exhibited, which is of course wholly from American, or Pan-American. artists, must be original, no copies being admitted. For the first time a separate building is devoted to the Graphic Arts and never before have Ethnology and Music been given such commanding and conspicuously central structures.

The different exhibit buildings are so small comparatively that the exhibits have had to be much restricted, only a small portion of those offered being accepted. The choice seems to have been made, however, with great care and with great impartiality, with especial attention everywhere to exhibits which tell their story in a striking and graphic manner.

It is neither possible nor desirable to furnish here any detailed description of, or guide to, the Exposition. We have told something of its history, its purpose, and its execution. We consider it noteworthy among expositions for its originality and excellence, and it reflects great credit upon the capacity and culture of those who have created it, and upon the city which has given it birth.

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